# THE ARCHITECT & BUILDING NEWS

21 JUNE 1956 · VOL 209 · NO. 25 · ONE SHILLING WEEKLY

- MULLARD LABORATORIES AND CANTEEN
- CONTRACTORS' PLANT III

PUBLISHED IN LONDON SINCE 1854

**WHERE SIMPLE OR COMPLICATED SCHEMES OF VENTILATION ARE INSTALLED, AND THE OPERATION IS REQUIRED, BY REMOTE CONTROL OR OTHERWISE, AND THE WINDOWS HAVE ANY OF THE FOLLOWING CHARACTERISTICS :—**

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- **OPENING INWARDS**
- **TOP HUNG**
- **HORIZONTAL CENTRE-HUNG**
- **BOTTOM HUNG**
- **VERTICAL PIVOT HUNG**
- **SIDE HUNG**
- **HORIZONTAL SLIDING**
- **VERTICAL SLIDING**

*The illustration shows One Set of Electrically operated Twin Tension Rod Gear with Counter-Balance Unit operating one continuous opening light, 74' 0" long x 5' 0" deep Note the Spiral Balance Wheel fitted at the end Sprocket.*

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SKYLIGHTS, LANTERN LIGHTS, CLERESTORY LIGHTS, FANLIGHTS, SIDE WALL LIGHTS IN WOOD OR METAL WINDOWS, OR IN PATENT GLAZING. ROOF LIGHTS AND BENCH LIGHTS IN GREENHOUSES, DAMPERS, TRAP DOORS, SHIPS SKYLIGHTS, ETC.
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*by* WILLIAM NEWMAN & SONS LTD.
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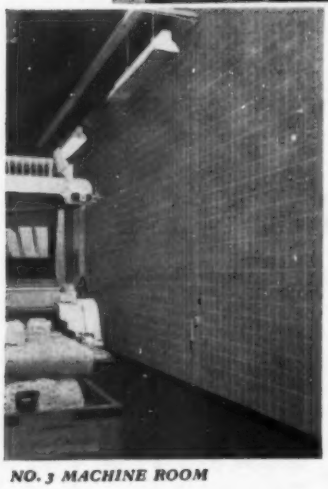
GEARING DEPT. BRANCH WORKS 3, WELLHEAD LANE, PERRY BARR, BIRMINGHAM

*CHOCOLATE ROOM*

*MIXING ROOM GROUND FLOOR*



*NO. 3 MACHINE ROOM*

*New Factory erected by the North Western Industrial Estates Co. Ltd., for Messrs. Huntley and Palmers Ltd., Architects and Consulting Engineers Messrs. Huckle and Durkin, London and Liverpool. Main Contractor Messrs. R. Costain & Sons (L'Pool) Ltd*

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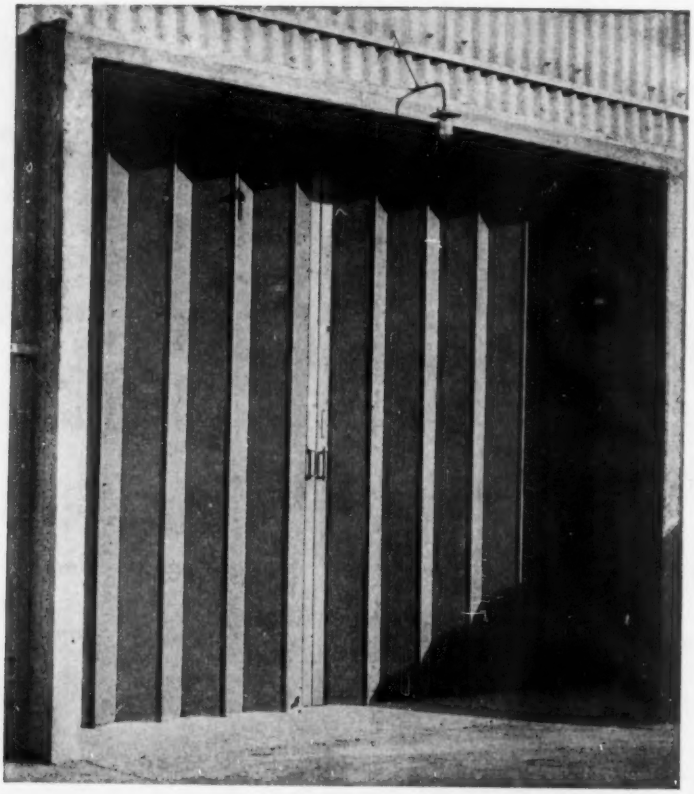
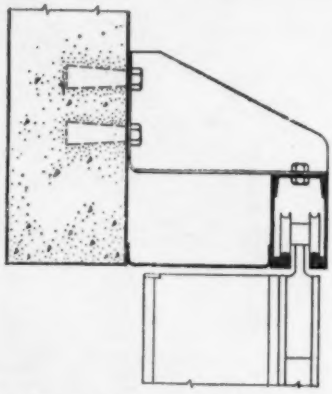
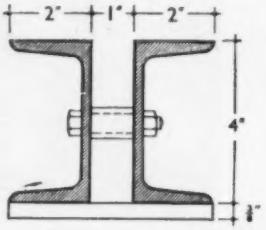




*One of the many methods of fixing.*

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Strongly constructed and attractive in appearance it is ideally suited to conditions where heavy and continual usage is likely to occur.
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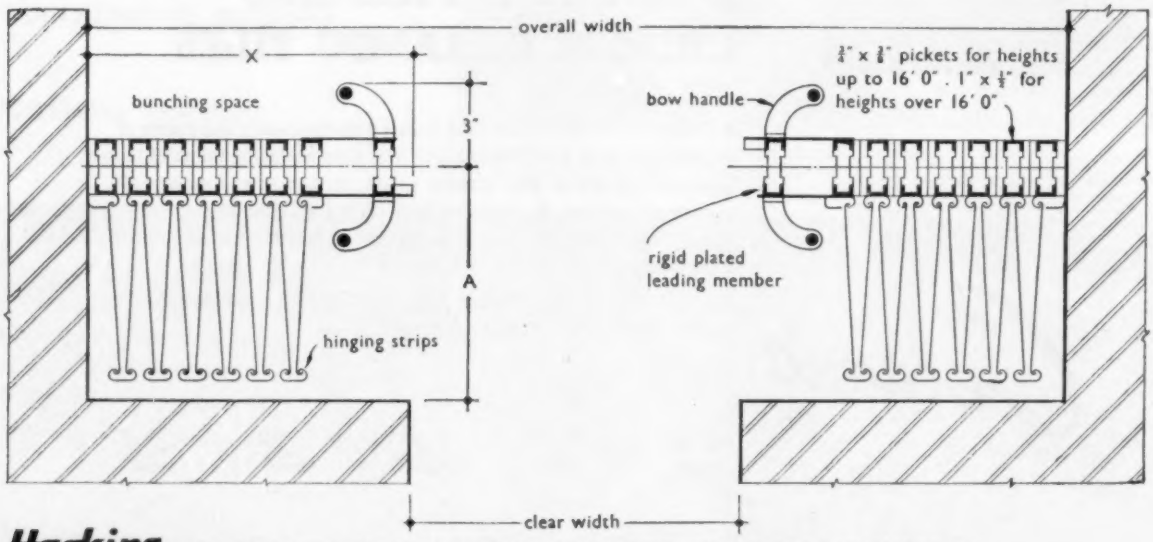


**Haskins** *GNOME HOUSE, BLACKHORSE LANE, LONDON E17 · TELEPHONE LARKSWOOD 2622*
*& BROOK STREET, BASINGSTOKE, HANTS · TELEPHONE BASINGSTOKE 1070*

# Key Executive . . .

*Fifteen minutes to get him, five fumbling minutes to find the right key* . . . Funnily enough, many firms think this security system is out of date ; *they* prefer the convenience of a YALE master-keyed suite. Master and sub-master keys open only those suites of locks allotted to them, whilst the Grand Master Key can open up to 12,000 different locks. Master-keyed suites are among the many YALE products which bring security, convenience and dignity to doors of every kind — in factories, offices, hotels, homes and many other buildings.

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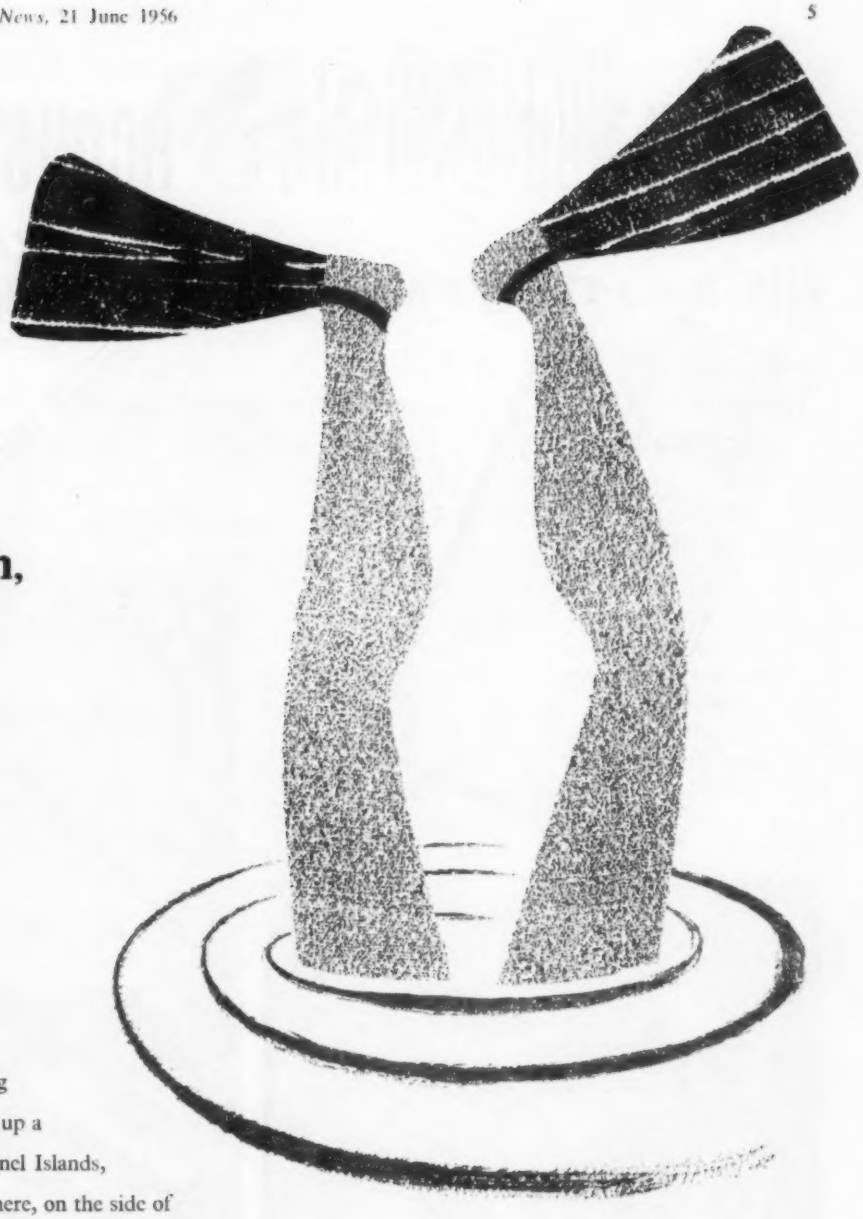
**"I'm going down," said the frogman, "to look at our walls"**



There are more ways of inspecting a wall surface than that of climbing up a ladder. At a place in the Channel Islands, you dive into 12 feet of water. There, on the side of a certain swimming pool, and very much against our wishes, you will find Pammastic—doing fine. It is not, of course, designed for life underwater. But this happy misuse provides a dramatic demonstration of a point that deserves publicity—*Pammastic is the plastic emulsion paint that can be used outside a building as well as inside.* Suitable for most surfaces, it needs no primer or undercoating, and dries in an hour. Its fine matt surface can be washed down and *scrubbed* clean repeatedly. Further information about the remarkable properties of Pammastic—and its notable complementaries, Pammel (the luxury gloss enamel), Pammelette (the superfine eggshell enamel) and Pammatt (the superfine flat enamel)—is available on request.

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# UNITEX MOSAIC ACOUSTILE

Pat. appln. No. 27416/53

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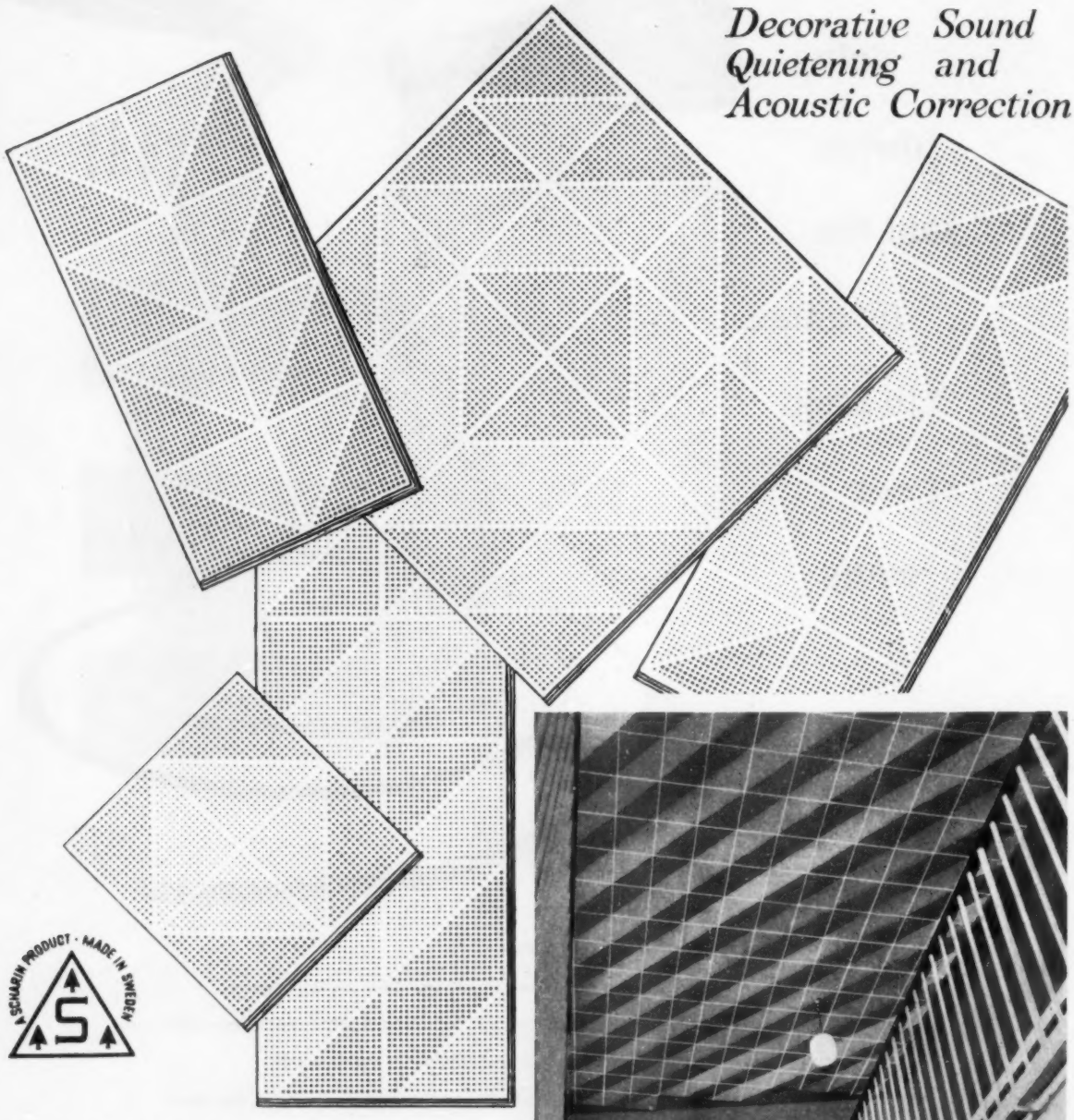

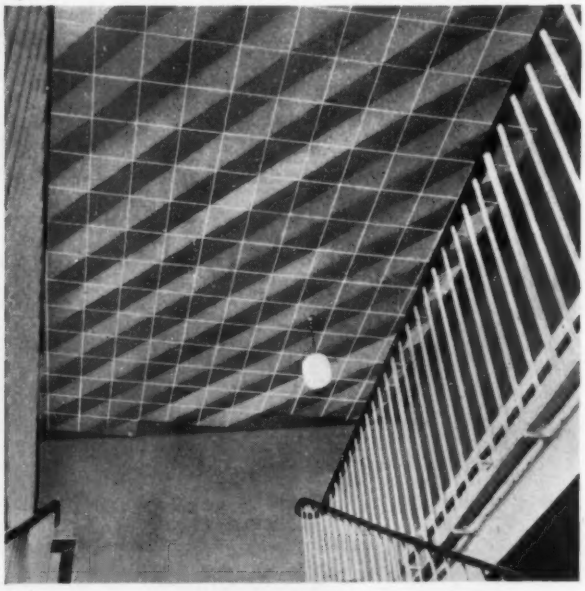

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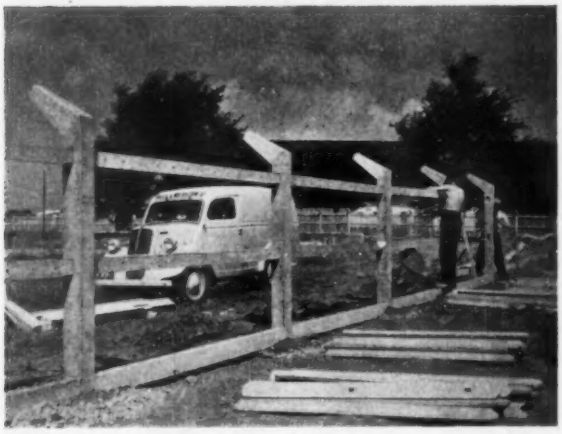
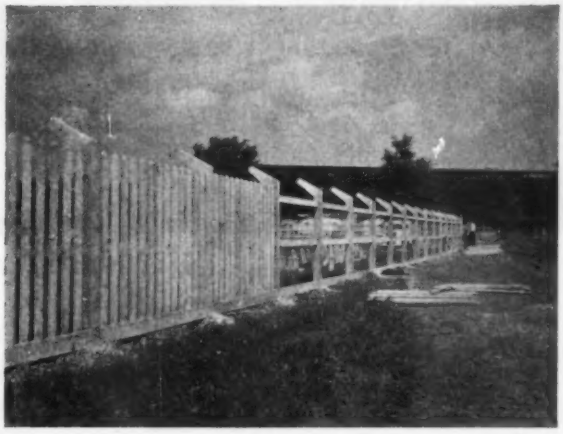
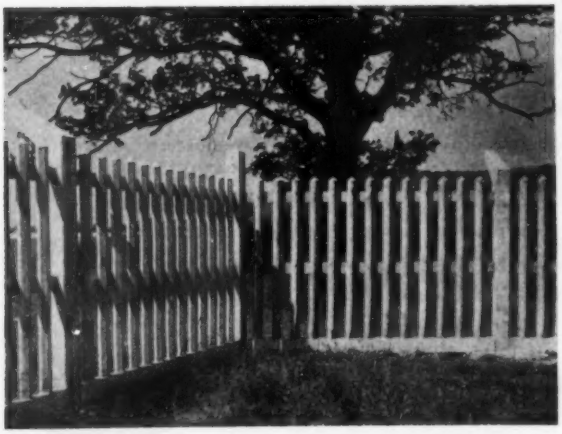


A "Palisade" fence in course of erection illustrating the main structure comprising 6" x 6" posts (in this case with extended heads for barbed wire) with arris rails and plinths. The plinths are recessed to receive the pales and themselves locate in the post mortices. Pales are fixed to arris rails by our special fixing (patent No. 744392) after main structure is erected.

Completed Bays with pales in position and the further structure ready to receive pales stacked on site.



A corner of the completed fence 6' high plus bent head post, giving approx. 7' to maximum post height. Including 3 lines of barbed wire.



*Photographs by courtesy of the Colne Valley Water Company.*

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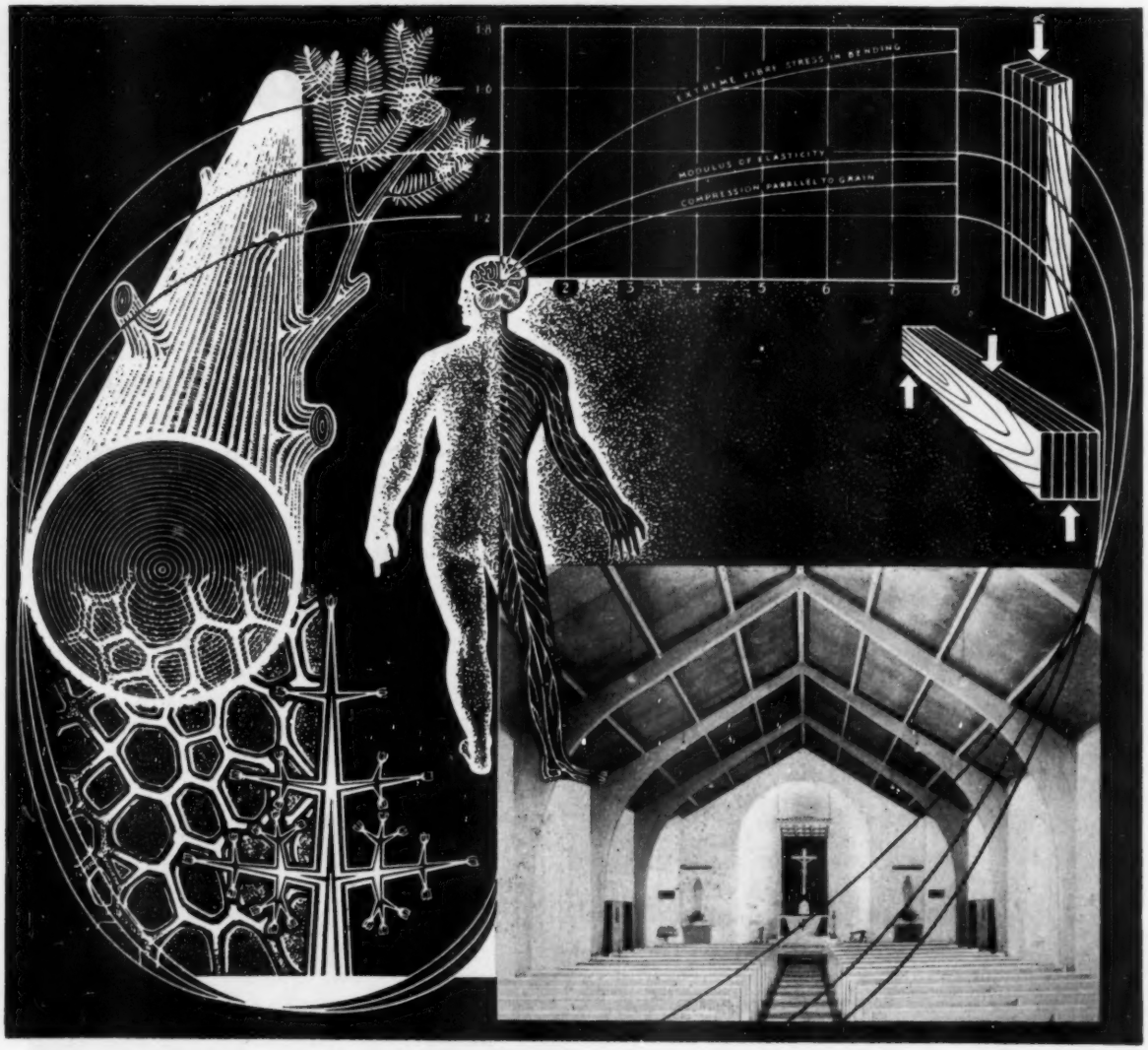


# Gluelam

An O.E.E.C. Report on "Glued Laminated Timber Construction" written following a mission to the U.S.A. has recently been published, and can be obtained from H.M. Stationery Office, price 10/-. The Report, of value to designers and manufacturers interested in the great structural and architectural possibilities of laminated timber, deals with the technology of laminating, design principles, desirable specifications, quantitative data required for design, and estimates of cost.

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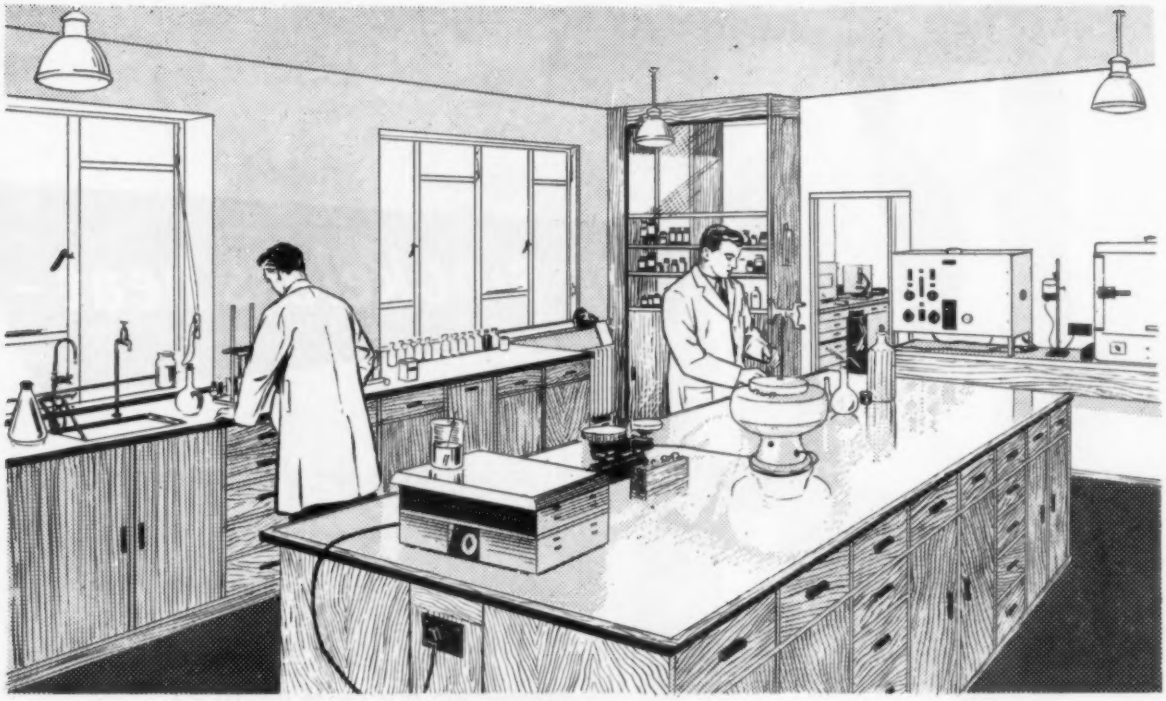

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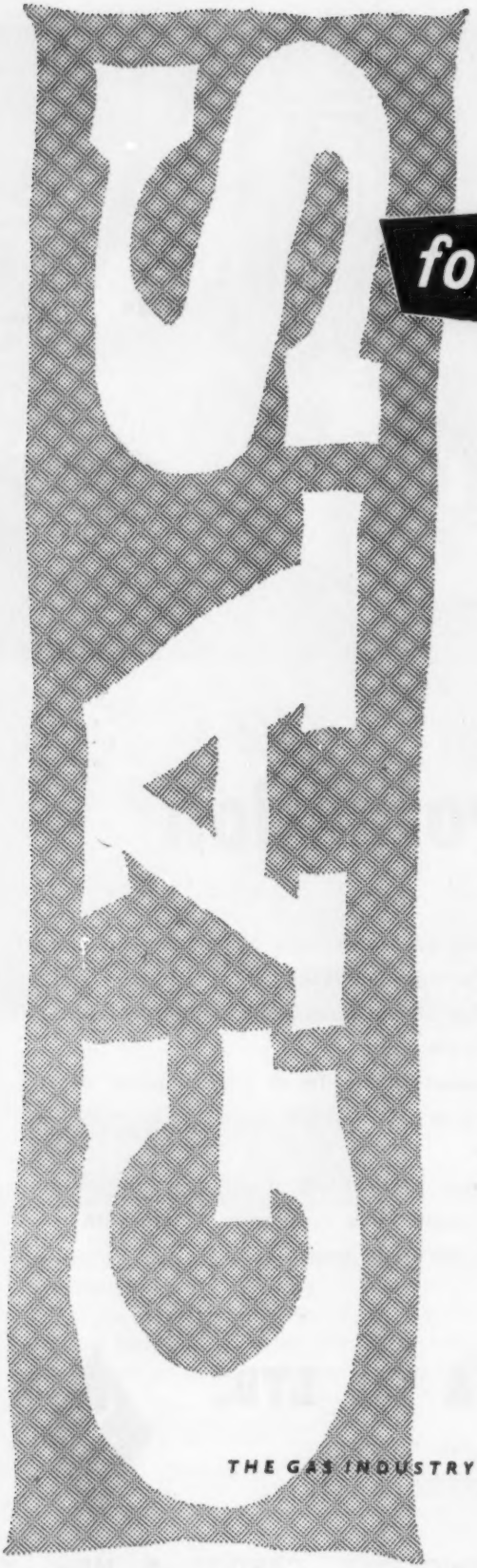


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***THE GAS INDUSTRY MAKES THE BEST USE OF THE NATION'S COAL***

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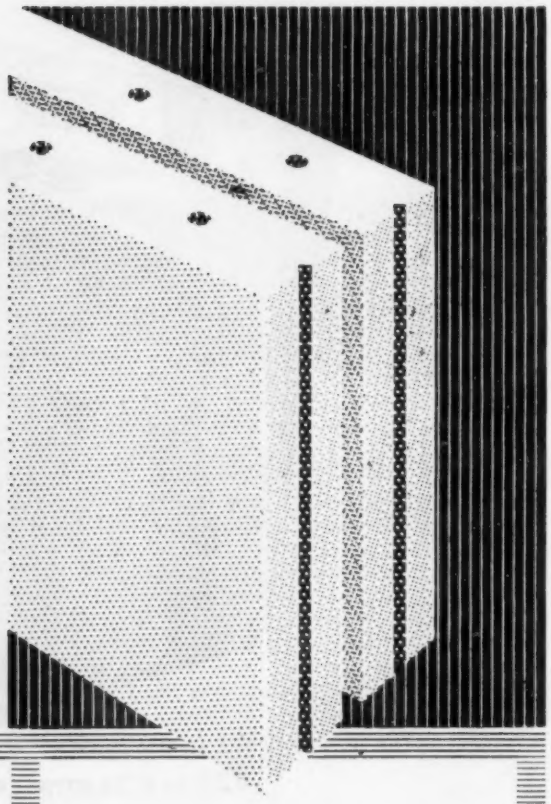

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Contractors :
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# ABNER comment

"Curtain walling of one sort or another being all the rage, I note that some expensive lessons are being learned. Within quite a short radius of this office there are several buildings where coloured glass in some form is being used for the panel in-filling. On one building a great many sheets have cracked right across. It would be interesting to know why. My guess is that insufficient allowance was made for the additional expansion of coloured glass. By this I mean that coloured glass in absorbing more heat than clear glass will expand more and therefore needs more room. I am glad that I shall not have to settle who is to pay for replacing the damaged panels. At the same time I hope that the designers of the other buildings will not be faced with the same trouble. It is a great pity that for the general good more publicity is not given to failures of materials and their causes."

# THE ANSWER

Glass rarely breaks, once it has been fixed, through an inherent weakness. The overwhelming majority of cases of breakage *in situ* examined have been traced back either to edges having been damaged before or during fixing, or to pinching. Of the two causes of fractures mentioned, tight fixing is by far the greater source of trouble.

Clearances should cater for the need to allow the panels to enter the frames easily; for expansion differentials between glass and frame; for the provision of thermal barriers between the edges of the glass and the framework when the latter is of metal; for the cushioning of minor twists in the framework so that they shall not be carried over into the glass; and for the deflections caused, particularly in large panels, by high wind pressure.

The use of large coloured glass slabs has brought us up against the unexpected but now rather obvious phenomenon of the stressed edge. Glass, being a poor conductor of heat, will show an uneven distribution of temperature if it is only partly exposed to the sun or other radiant heat source. The temperature gradients so formed will become steeper as the colour is deepened. Owing to the time-lag before an equilibrium is reached, the immediate effect of the heating up by direct sunshine of the exposed portion of a coloured glass panel is to place the edges under tension, and, unless those edges are in good condition, they may yield at their weakest points. Cracks will then form, which as a rule will develop slowly in the early stages but may well finish with a loud report. It may take days or even weeks before a small fissure along the edge develops into a visible crack. Wired glass is particularly vulnerable.

The clearances to be allowed fall under two heads:

(a) The perimeter clearances, as between the edge of the glass and that part of the frame which is known as the glazing platform.

(b) The front and back clearances, as between the face of the glazing unit and the front fixing bead or angle on one hand, and on the other hand as between the back of the glazing unit and the backstop.

Of the front and back clearances the front is the more important, because it is in the outer or outermost leaf of the assembly that such radiant heat of the sun will be arrested as reaches the particular elevation. If the edges of a heated glass plate are chilled through direct contact with a metal frame, there is a considerable risk of small fissures developing at the point of contact, and that these fissures will, due to other causes, such as vibration, develop into cracks. The back clearance is, however, not without importance, because it is the combination of the two clearances, that is to say front and back, which make it possible to avoid the transference from framework to glass of the minor twists in the general structure which occur through temperature changes. While glass plates will accept a considerable amount of bowing they are very vulnerable to twist.

A pamphlet containing specific recommendations applicable to the glazing of structural insulating glasses to steel, aluminium, timber and reinforced concrete is now in the hands of the printer. Nine types of fixing detail are illustrated and examined. The choice of glazing or jointing compounds is discussed. Copies will gladly be sent on application to:—

**PLYGLASS LIMITED**

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**Manufacturers of VITROSLAB infilling panels for CURTAIN WALLING. HEAT INSULATING LIGHT DIFFUSING PLYGLASS for the glazing of translucent roofs and walls. Also FIBROPANE & CONTRALUX GLASS for suspended ceilings.**

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*City Architect and Planning Officer: Arthur Ling in succession to Donald Gibson.*

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2. Fully automatic control and the flexibility of Weatherfoil equipment ensure outstanding economy in running.
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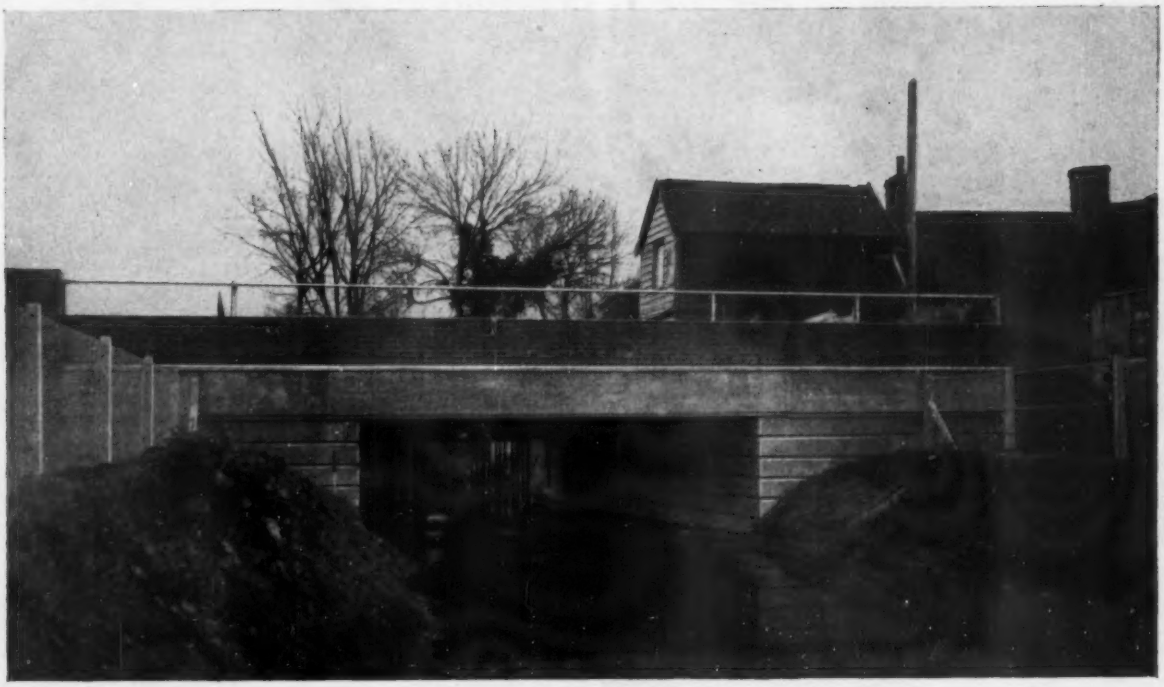
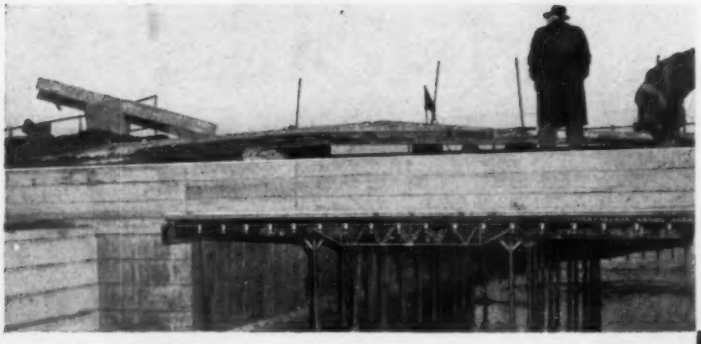
# Bridge the gap



# more easily



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**WINDOWS | SILLS | SLATE** 24.Z1

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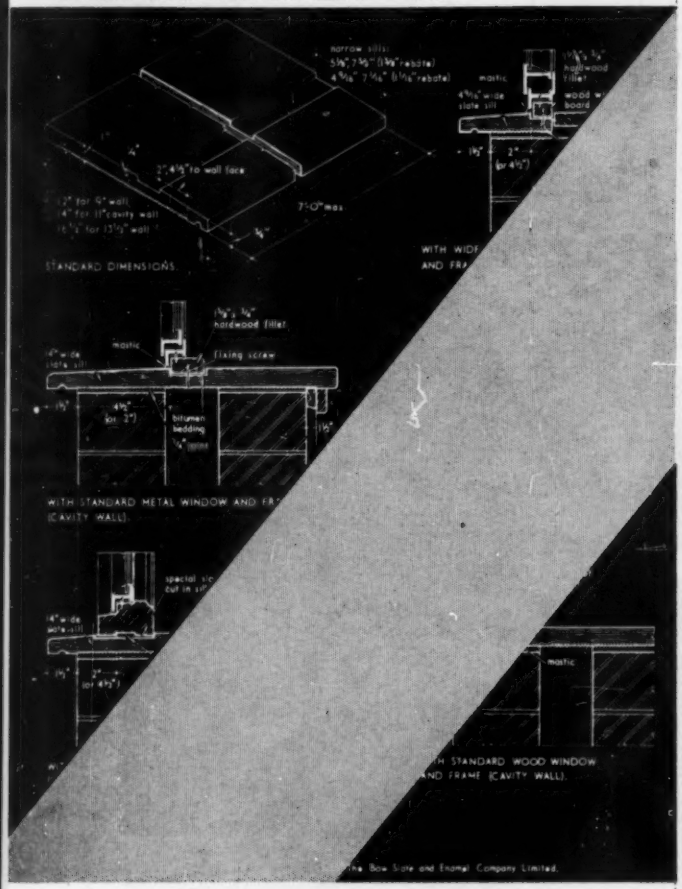


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**WINDOWS | SURROUNDS | SLATE** 24.Z2

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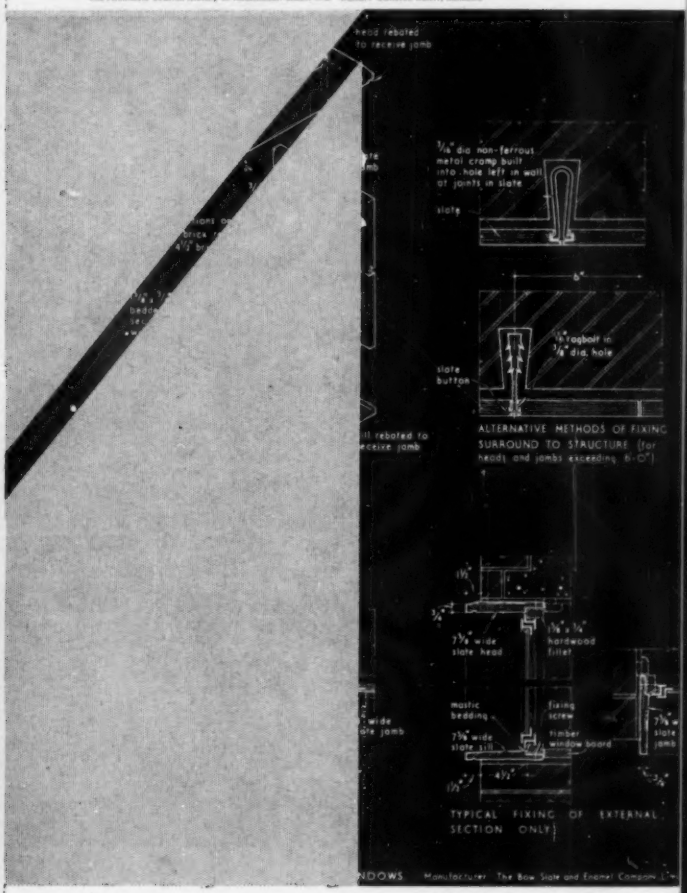
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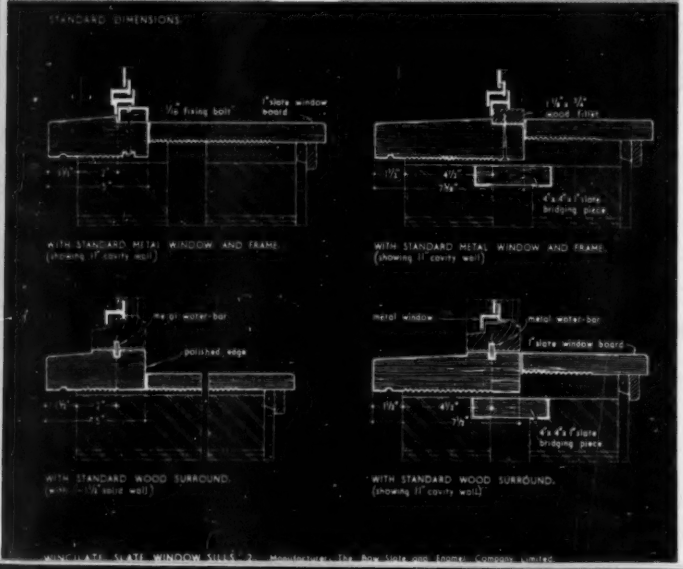
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WITH STANDARD WOOD SURROUND (showing 11" cavity wall)
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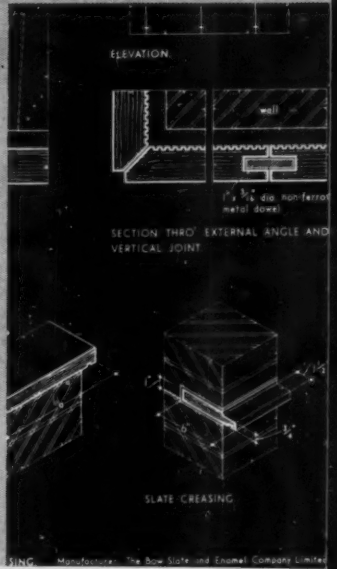


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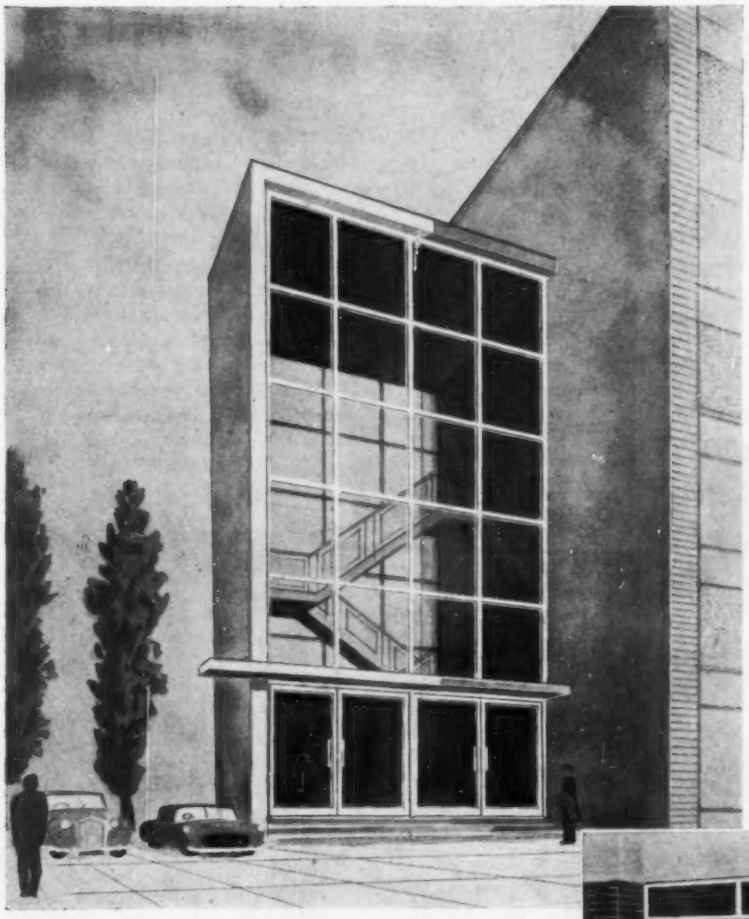
# . . talking about ENTRANCES



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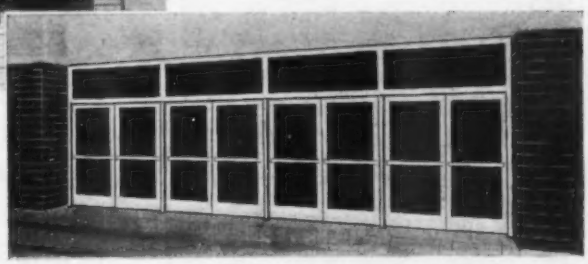

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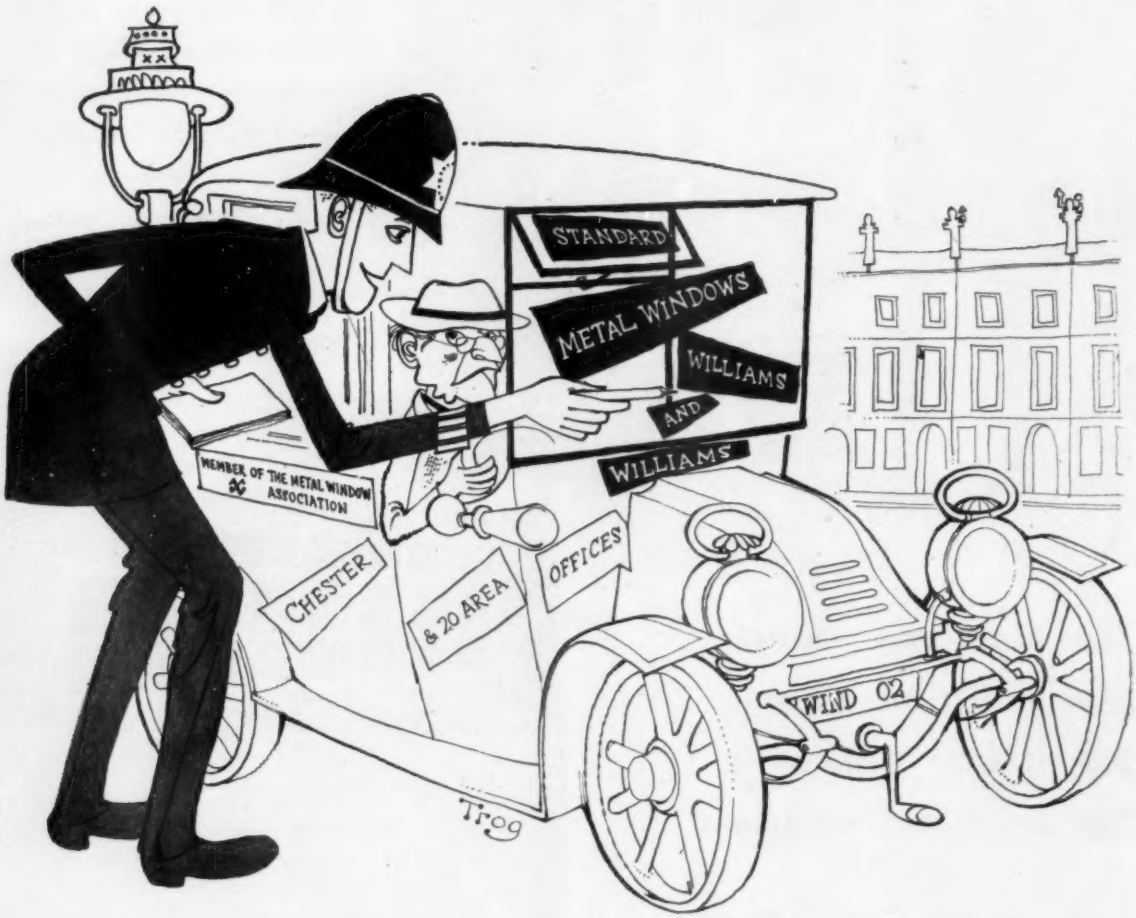
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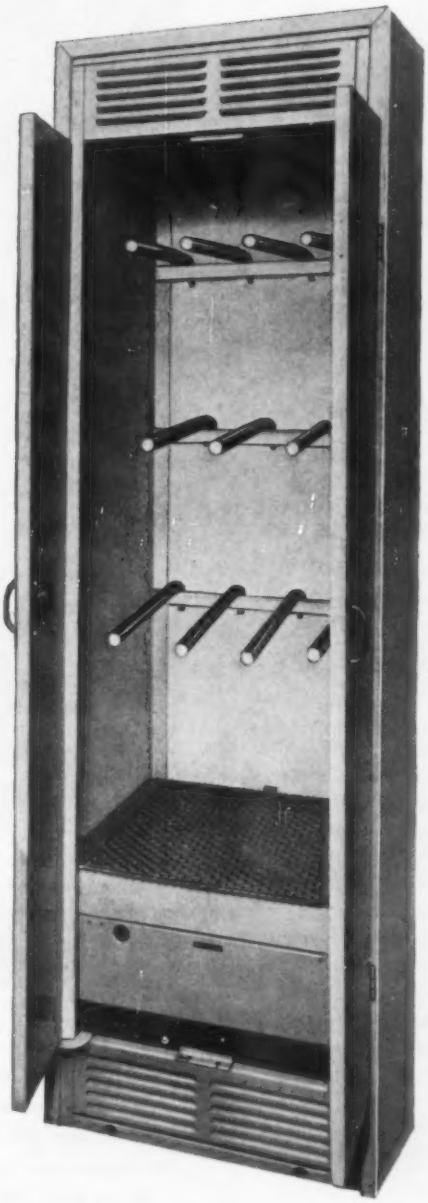
(FOR SINGLE DWELLING INSTALLATIONS)



**The FLAVEL Clothes Dryer** is constructed so that it can be supplied either as a complete unit or, alternatively, for building into a recess or corner by utilising the main frame assembly and such component parts as may be necessary.

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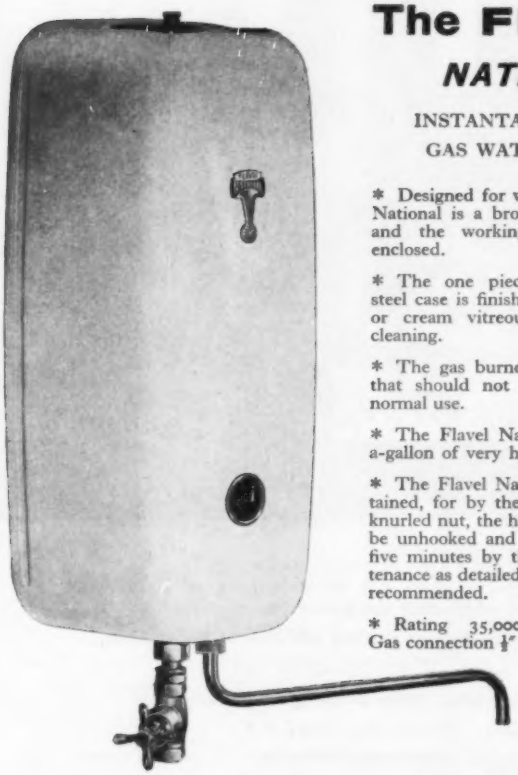

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* The Flavel National provides half-a-gallon of very hot water per minute.

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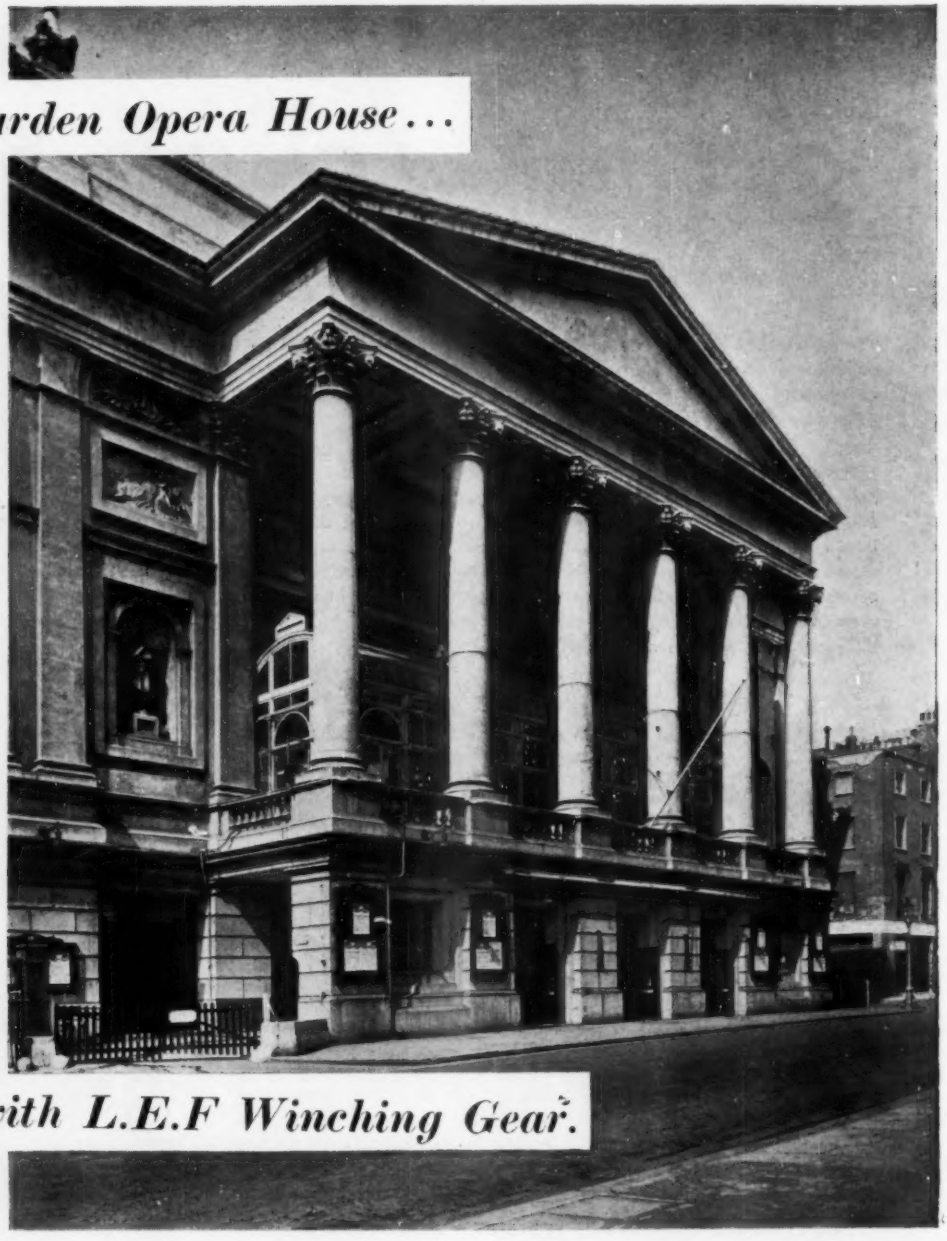

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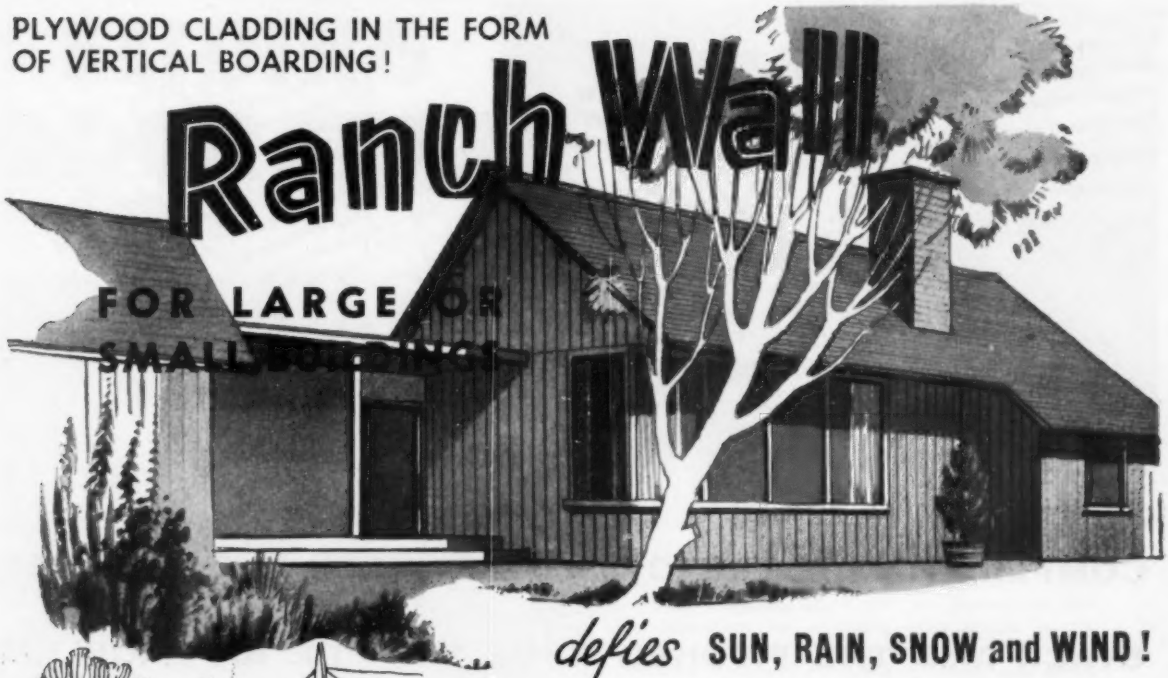

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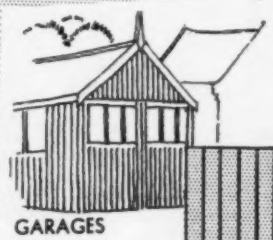

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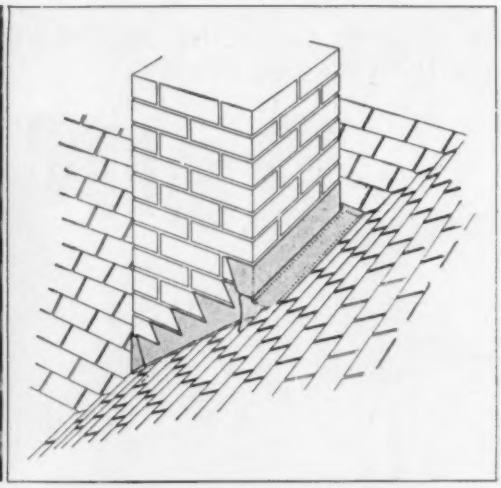

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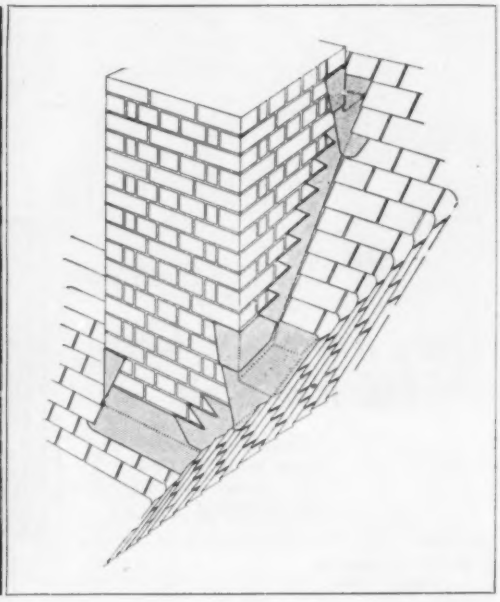

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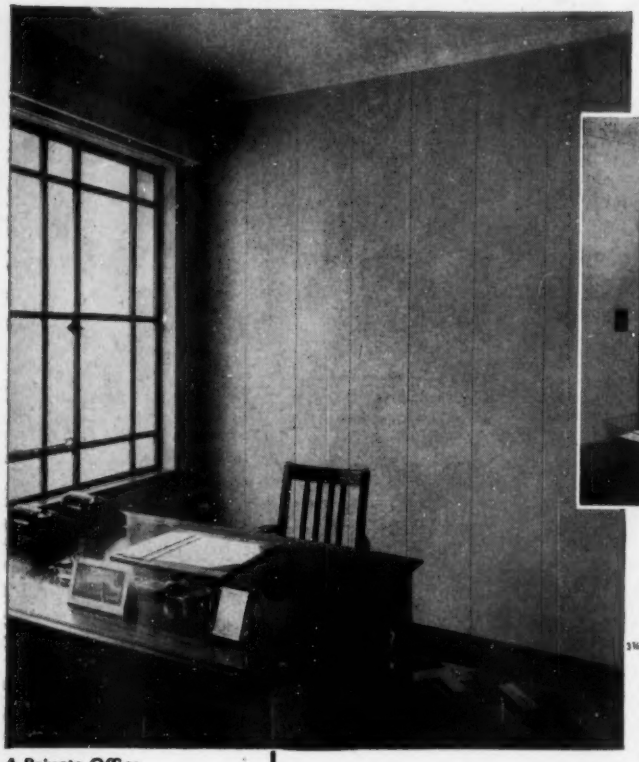
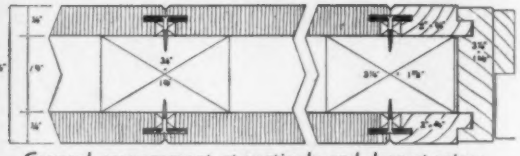


A Private Office

A Dealing Room



General arrangement at verticals and door openings.

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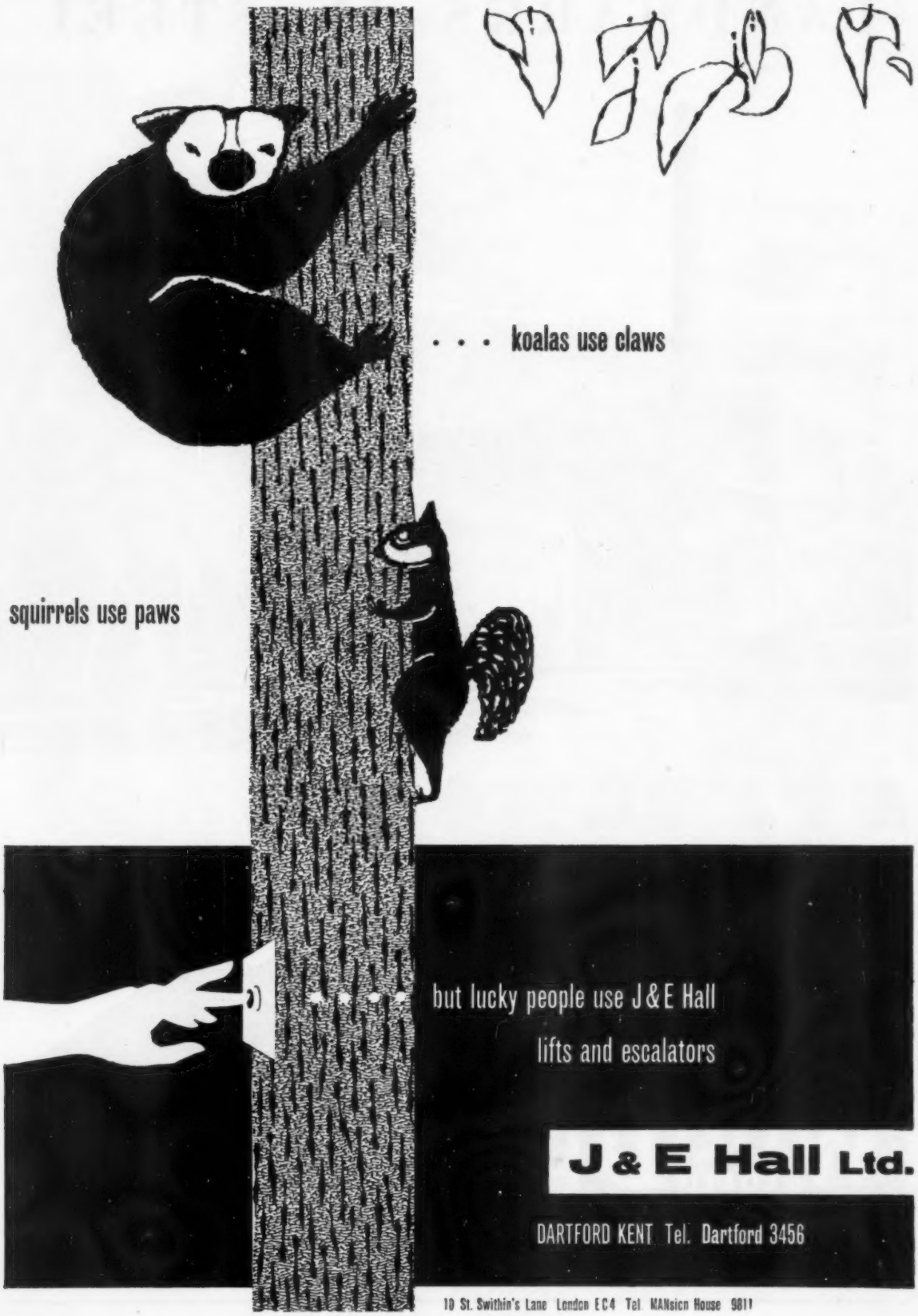
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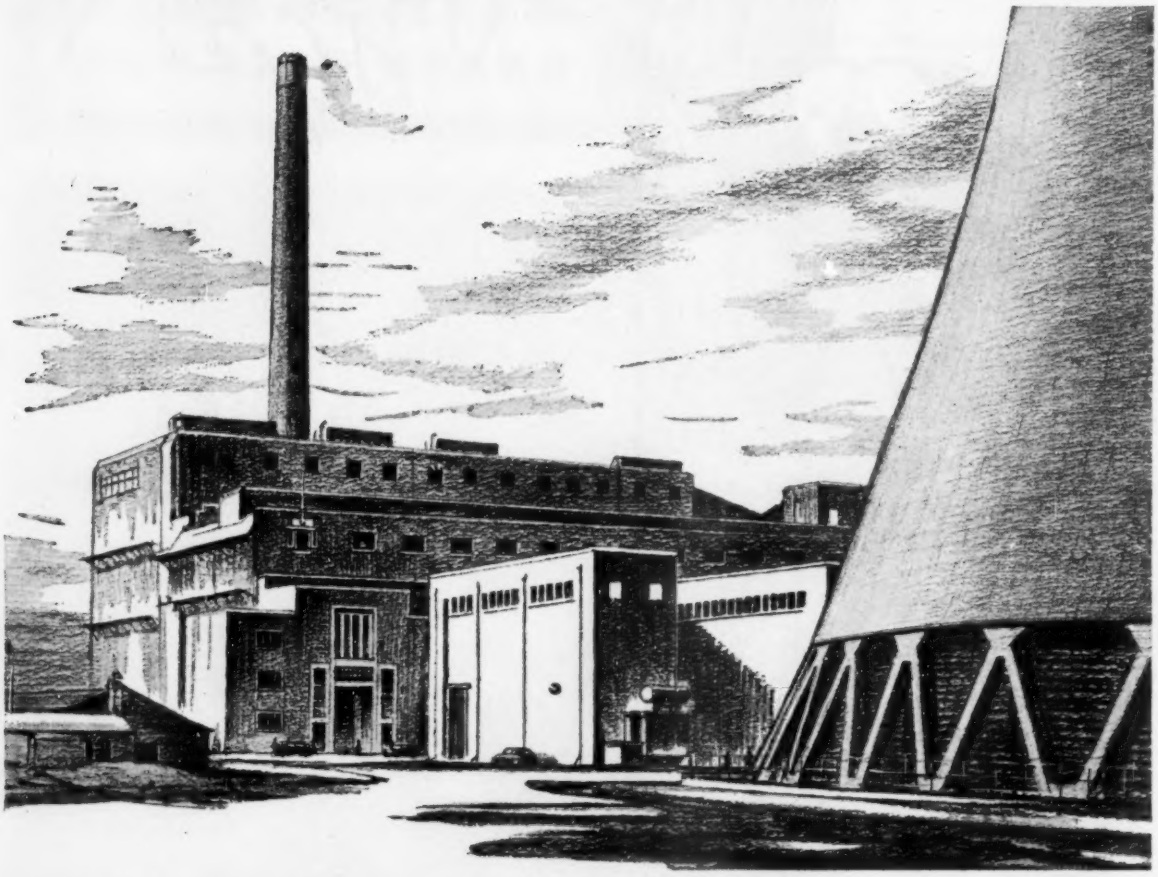

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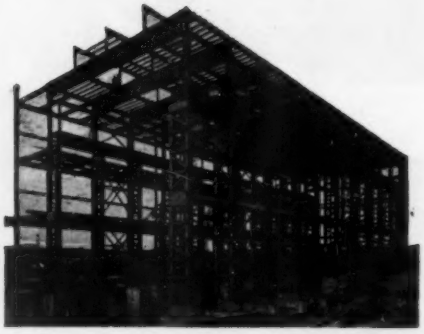

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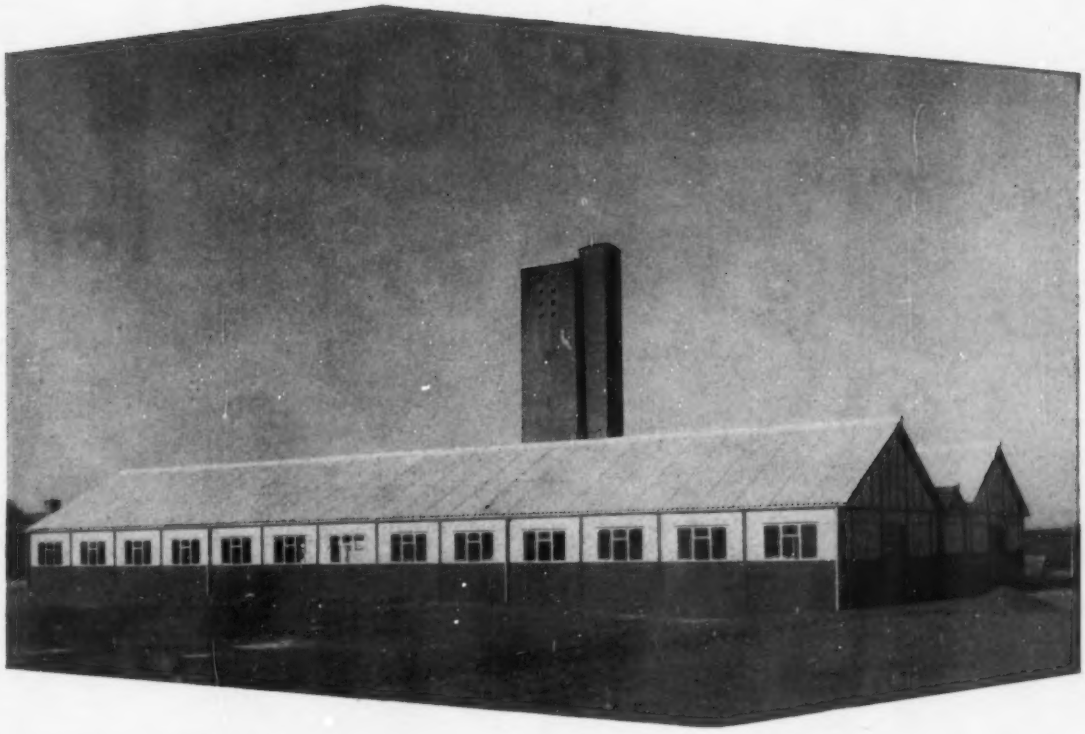

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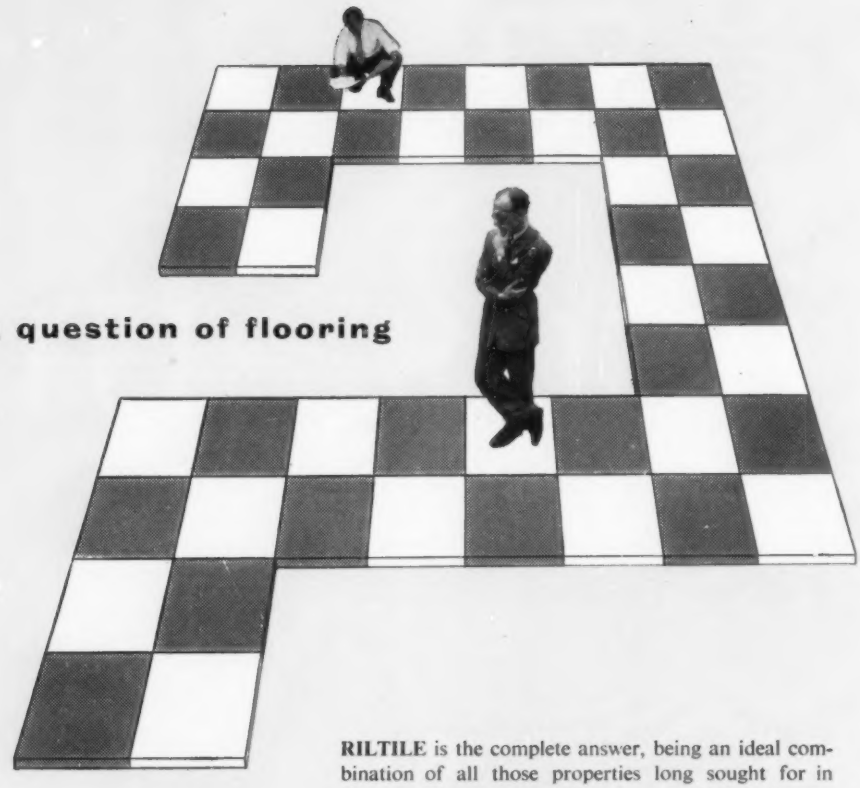

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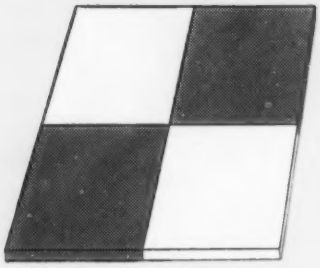

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THE ARCHITECT & BUILDING NEWS

June 21, 1956

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*Branch Offices:* Coventry: 8-10 Corporation Street; Birmingham: King Edward House, New Street; Manchester: 260 Deansgate. Tel.: Blackfriars 4412 (3 lines), Deansgate 3595 (2 lines); Glasgow: 26B Renfield Street.

# ACCIDENT PREVENTION & PRODUCTIVITY

IN an age of Welfare and full employment when our very existence depends on producing more and reducing lost time to a minimum, it is unfortunate to say the least, that the Building Industry can be accused, and quite rightly, by Her Majesty's Chief Inspector of Factories, of not facing up to its responsibilities with regard to accident prevention.

It is true that London and a few other progressive centres have Building and Civil Engineering Accident Prevention Groups which are affiliated to the Royal Society for the Prevention of Accidents; that organisations such as the National Federation of Building Trade Employers and the London Master Builders' Association have sub-committees to deal with this subject, and that some firms are making a determined attempt to tackle the problem.

These efforts are commendable and should be encouraged in every way. But how much impact are they having on the industry as a whole? The provisional figures for building accidents for 1955 provide an answer. Employers and unions alike should feel nothing but shame to learn that accidents have increased still further (provisionally — 14,500 injured and 176 fatal accidents).

Analysis of the location and causes of these accidents show that the number of building accidents reported in London and the Home Counties during last year had not increased, whereas there was a general increase for the country as a whole. Most casualties of building accidents show a higher figure. Accidents due to mechanically propelled vehicles were up by 11%; those due to machinery, by 12%. Falls of persons and materials (6,302 accidents with 138 fatalities) were the largest causation, and in the former category falls from cradles were less than one-third per cent. of all falls of persons from working platforms. Falls from ladders and step-ladders accounted for approximately one-quarter of all falls of persons.

What is the result of all this on the industry?

Quite apart from the humanitarian aspect—the pain and suffering caused to the individual, the grief of dependants and relatives in serious cases; or the question of law (how many accidents could be prevented by stricter compliance with the Building Regulations!) There is the economic effect of an accident-prone industry: Dislocation of site organisation; payment of ever-increasing insurance premiums which must be reflected in the overheads of a building firm; loss of valuable man hours. These are all direct money costs to an industry which can ill afford to neglect the consequences.

We are not prepared to believe that either employers or operatives (for they too are not blameless) would wish more drastic measures to be taken in the enforcement of the minimum legal requirements already laid down. But unless some better alternative can be shown effective, it would appear that there can be little choice in the matter.

The real answer still rests with education and propaganda and in this respect yet another sub-committee endorses this view. In its May report on Industrial Accident Prevention* the Industrial Safety Sub-Committee of the National Joint Advisory Council recommends that "Safety training should be integrated and given emphasis in the theoretical and practical instruction in Technical Colleges and in the courses in Management Studies and Techniques." Who would benefit from such a training? Not only the contract supervisors, the general foremen and the apprentices and all those others who attend the courses, but the whole industry. For sites would become safer working places, costs would be reduced, and a fast-growing stigma would be removed.

This is the challenge that the industry must face up to now if it wishes to prove that it takes seriously the implications of accidents on productivity.

* H.M.S.O. 1s. 6d.

# EVENTS AND COMMENTS

## MORE ABOUT GLASS

Mr. John T. Lewis mentioned in a letter last week that one type of wired coloured glass had been withdrawn allegedly because of differential stresses set up between the coloured glass and the wire when heated by the sun. It is odd that this was not thought of by the manufacturer in the first place.

I learned another interesting fact about wired glass the other day. It appears that failure of such glass near its edges due to the corrosion of the wire is not uncommon. This may occur on the unprotected edges when patent glazing is used. The wisest precaution is to ensure that all edges are carefully coated with a bituminous paint. This needs very close supervision. I understand that experiments with aluminium wire are proceeding.

## TIDY AND UNTIDY

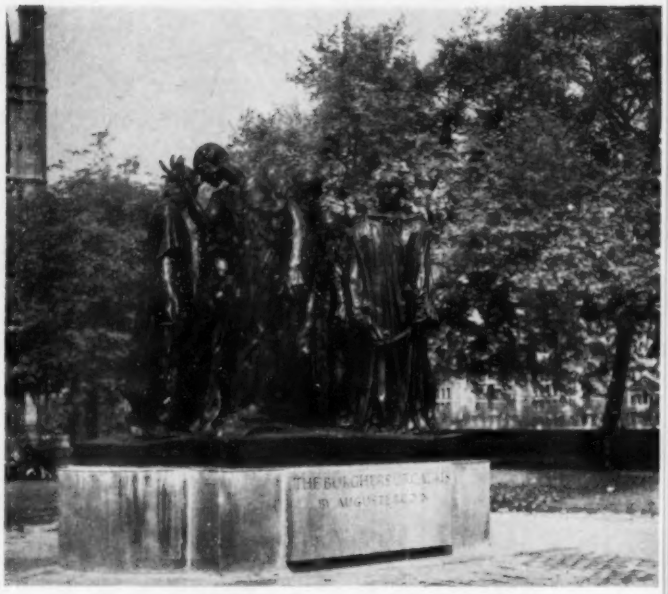
Once more correspondents in the Times have come down heavily on the side of the Holford Plan after being baited by Sir Alfred Bossom and the Duke of Wellington. Rarely can such a broadside have been fired as has appeared on the morning of writing this. (It includes Robert Furneaux Jordan, Charles Holden and Basil Spence.) The broadside was invited by a particularly silly approach where the formal balanced or 'tidy' layout was compared to calculated disorder or 'untidyness.'

In the same issue of the Times is the news that the Common Council of the City of London has approved Sir William's plan in principle. I never know quite what this means but it is clearly a step in the right direction. Provided that it does not mean that they propose to mess it about until it is unrecognisable. This kind of thing has happened in the past. It is possible that this was at the back of Sir William's mind when he proposed that the control of the precincts should pass from the control of the City Corporation to a Joint Committee. In approving the plan 'in principle', the Common Council made it clear that it did not propose to lose control of the area.

I would like to see a Joint Committee because I do not think that the Corporation is at all clear sighted in its planning or architectural policy. Although it has, so far, taken approximately the right course on Holford's plan, it has given us some nasty moments. St. Paul's and its precincts are certainly in the City of London, but they are also part of the National Heritage.

## RODIN AT EYE-LEVEL

From time to time there are complaints about the quality and planning of our public statues. It is good, therefore, to be able to commend an improvement in the setting of one of our resident masterpieces. I believe Sir David Eccles first took the decision to cut down the absurdly high and elaborate plinth of Rodin's 'The Burghers of Calais' in the Victoria Tower gardens. You may remember that it put the group almost out of sight. The work is now completed, as my picture shows.



*Rodin's "The Burghers of Calais"*

It is a very great improvement. My only regret is that it is in such an out-of-the-way place. Now if it had been moved to Parliament Square or St. James's Park. . .

## DESIGN IN ADVERTISING

The Alliance Graphique Internationale has a most gay and entertaining exhibition of posters and other advertising art at the R.B.A. galleries. It is only on for one more week and should be seen by everyone interested in improving our hoardings. The Alliance has some seventy members in eleven countries and while there are certainly some very well known names who are not members, all those who *are* members are internationally known. The exhibition was opened by the French poster artist Jean Carlu, who is the President of A.G.I. F. H. K. Henrion, who is a vice-president, and who arranged the exhibition, also spoke and suggested that some public-spirited body should come forward to finance the exhibition on tour in this country. Indeed it would be admirable if such a thing were to happen.

The audience at the opening was smart and cosmopolitan. I suspect that the very well-dressed men were advertising executives. It is interesting to note that Olivetti, Schweppes, W. E. A. Gilbey, Shell Mex and Air France all use the work of A.G.I. members in their advertising.

Much as I enjoyed the exhibition, it raised a number of warring passions in my not so well dressed breast. Basically I hate advertising (*pace* that department of the A.B.&N. and all advertisers) at its best insinuates itself into our lives by employing good artists and clever ideas, at its worst it lies, panders, misleads and distorts. Very often it ruins the view, too. Bad commercial art is available in unlimited quantities although this exhibition, while you are in it, may give you the impression that all is well. Well ? Is not the advertising devil even more dangerous when represented by the skill of such people

as the members of A.G.I. ? I quite consciously avoid reading the texts of advertisements, but I do not go about with my eyes shut. I always reckon to be in the first three in that party game. Clearly I am just as prone to advertising as the most gullible, and, just as clearly, there is advertising designed to catch my type and every other type, as well. Clever devils!

'The poor man's picture gallery', someone once called the poster hoarding—was it really the Prince of Wales ? Certainly anything that will improve the standard of what appears on our hoardings should be encouraged. We could do with more work to A.G.I. standards. The foregoing perhaps gives the impression that the exhibition is all posters. It is not and at a risk of being accused of showing marked favouritism, I must mention especially a whole series of delicious book illustrations by Barnet Freedman. It is worth going to the exhibition to see them alone.

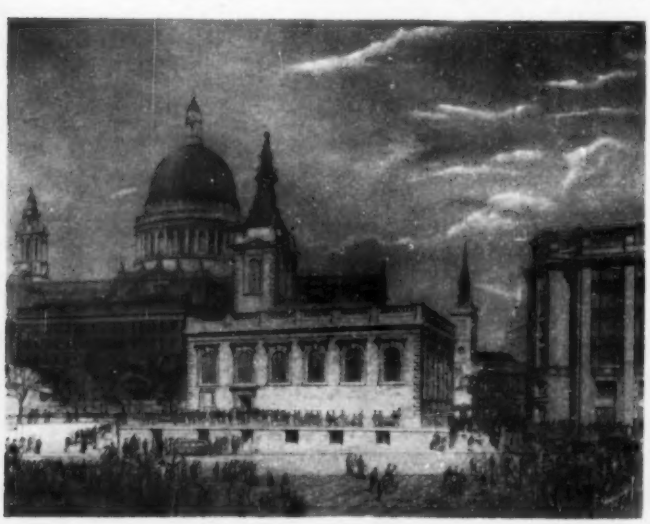
Several of the firms mentioned earlier have small private exhibits of their publicity material by A.G.I. members. These firms can justly claim to contribute to the cause of better hoardings and (I have to admit it) better advertising.

## *WINTER PAINTING*

You ought to know that house-painting is virtually a seasonal occupation. Painters are rushed off their ladders during the summer (although I cannot remember having seen many painters who looked unusually busy) and often idle in the winter months. This is leading to a drift of skilled craftsmen from the trade.

The Paint and Painting Industries' Liaison Committee is organising a campaign to encourage outside painting during the winter months. The Committee says that better terms can be offered for inside winter painting contracts since more skilled labour is available and over-time can be cut down or eliminated. Perhaps you could do something to help this campaign.

*At the Royal Academy's Summer Exhibition.*
*St. Nicholas Cole Abbey, New Terrace and Approaches.*
*Arthur Bailey, Architect Drawn by J. D. M. Harvey*



## *CLEAN AIR AT THE NATIONAL GALLERY*

Six more rooms have been reconstructed, refurnished and opened to the public at the National Gallery. Three of them are air-conditioned bringing the number of rooms so treated up to six. The six new rooms have been closed to the public since the war. Unable to attend the press view, I called during the lunch hour and quickly forgot about the rooms in the excitement of seeing the pictures as never before, without glass, and most superbly lit by the new arrangements. The walls have been hung with mercerised cotton damask which I have to admit I thought was wallpaper. I like the cooler shades very much but found the "near-gold" as it is called a bit overpowering on the first room. However, it suits another of the rooms very well indeed. I very much hope that more air-conditioning is planned, for not only is it good for the pictures but it suits me, too.

The low rope barrier which serves to keep the over-enthusiastic from actually breathing on the pictures is supported on somewhat overdesigned uprights which for some reason curve inwards. I would have expected them to have curved outwards, and I think they would look better if they did.

## *THE OBSERVER FILM EXHIBITION*

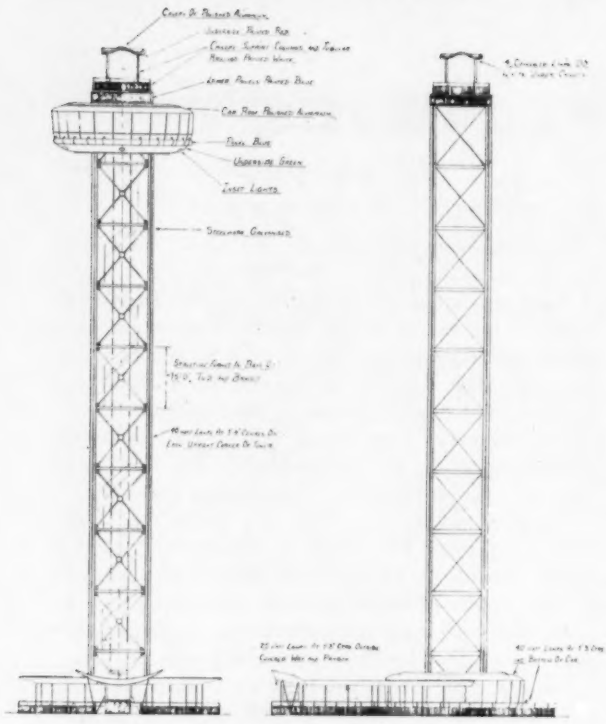
This show unhampered as far as I know by strikes must take the bun for the most unready of all exhibitions on the opening day. As I write more than a week afterwards, the place is still stiff with workmen. Rumour has it that at the opening party guests and builders' men were drinking together cheerfully. As someone said, it looked just like a film set. I'm postponing my visit until it's finished.

## *A NEW BRITISH RAILWAYS HOTEL*

It is welcome news that the British Transport Commission is to rebuild the Royal Station Hotel at Newcastle-upon-Tyne. The number of bedrooms will be increased from 140 to 250 and most if not all will have bathrooms.

We may, I think, confidently look forward to a well designed building. When it comes to its furnishing and equipment, however, I personally begin to lose my confidence in good design. That is unless the architect's department are in charge of the whole project. Normally I imagine the Hotels' Executive would be responsible for the equipping of a new hotel. So far this Executive has not set itself nearly high enough a standard. This can easily be seen in any re-furnished railway refreshment room or bar and I have often commented on the subject.

A new hotel in this country is still rare enough to



*Proposed Viewing Tower for Battersea Pleasure Gardens*

be an event. At the moment the score is one-all in terms of the best in design. It is time that the Hotels Executive took design seriously. The equipping of the new Royal Station Hotel provides an admirable opportunity for doing so.

## *FESTIVAL GARDENS ASCENT TOWER*

The M.o.H.L.G. has more or less approved the erection of the ascent tower for the Battersea fun fair described on this page some months ago. It has been designed by Guy Sheppard and Roderick Ham. I say more or less approved because the Minister thinks that the tower might be more graceful and pleasing and would like to see further thought given to it. Looking at the present design this seems to me to be tantamount to asking the architects to start again.

My original comment, by which I stand, was that whereas the tower would look pleasant enough with the lift car at its top, it would look pretty dull when the lift car was on the ground. For those who missed the previous issue, I should explain that a circular car to seat 48 passengers, climbs and rotates about, the outside of a square framed tower. (See my picture.)

I must admit to having some sympathy with a correspondent writing to *The Times* and pointing out the government's inconsistency in allowing some £56,000 to be spent on such a thing while putting on a credit squeeze and threatening us with inflation and other kinds of hell-fire.

## *LEAD NEWS*

The Lead Development Association has published the first number of *Lead News*, a well produced leaflet made up to B.S. size. This issue contains an article on the use of lead in atomic energy and references to B.S. revisions for lead pipe. How convenient it would be to have an electronic brain to retain all the information that well-meaning and hardworking information officers push out in ever-increasing quantities.

## *MAY WE HAVE YOUR OPINION?*

This craze for asking famous (or non-famous) people what they think about things they have either not seen at all, only just seen, or do not want to see is an annoying and growing pest. I am much in favour of its immediate discontinuance. When I go to a Press show I am very likely to turn nasty if some idiotic female descends on me with a gush, "Oh *do* tell me who you are, are you an *architect* (horns begin to sprout) and *terribly* important I'm sure, *do* tell me what you think of our show." "I think it stinks, but this champagne is very good is it not?"

If people are asked to attend a private view they should be left in reasonable peace to form their own opinions not harried with half-baked harpies. As for being interviewed by someone with a poised pencil as one steps through the door while some idiot photographer wanders at one's feet with a flash machine that does not work, why, sir, it's intolerable. Anyone trying this sort of thing on me in the future will get manhandled, yes, sir, male or female.

## *ANOTHER INTERNATIONAL COMPETITION*

Come on you fellows working on the Sydney Opera House Competition, there is another job lining up. The Oslo City Corporation is organising a competition for a Concert Hall to seat 1,600. This seems small by present-day standards and means that seats must be very dear or State subsidies very high.

**ABNER**

## *Correspondence*

### The Design Centre

Sir,

It is unlike ABNER not to be fully up-to-date in design matters and I was therefore surprised to read in his column 31/5/56 his reference to The Design Centre and his question "Is it beyond human ingenuity to design a non-reflecting window without a vast black tank in front of it?"

Such a window has been designed and used most effectively by Rolf Hellberg, F.R.I.B.A., first at the new store for Owen Owen Limited some two years ago and secondly, also in Coventry, at the new store for Messrs. A. D. Foulkes, which was opened recently. I understand that the design is patented under British Patent 723485.

Yours, etc.,

PETER TRENCH,
Managing Director Bovis Ltd.

# NEWS

## Guarantees for Roofing

The National Employers' Federation of the Mastic Asphalt Industry and the Felt Roofing Contractors' Advisory Board have recognised for some time that it is no longer normal practice in the Building Industry for specialist trades to issue Guarantees, particularly as modern contract conditions in the R.I.B.A. and other Forms of Contract in common use lay down specific requirements as to periods and conditions relating to the Defects Liability of the Specialist contractor.

Long-term guarantees no doubt served their useful purpose in the Asphalt and Built-up Roofing industries in past days when these materials were untried and unproved, but such a basis for their well-established industries is now considered to be outdated and unnecessary.

The National Employers' Federation of the Mastic Asphalt Industry and The Felt Roofing Contractors' Advisory Board have therefore decided to reduce the length of guarantee and also to issue a Form of Guarantee common to both Bodies, and announce that as from the 1st July, 1956, all their Members will, on request, issue this Guarantee covering a period of twelve months from the Practical Completion Date of the Main Contract for Mastic Asphalt or Built-up Felt Roofing, Dampcoursing and Tanking and Asphalt Flooring against approved specifications. This one-year period will operate irrespective of the length of Maintenance or Defects Liability Period appropriate to the Main Contract.

Any Guarantee already in being will of course continue without change.

Architects and other customers from their long experience of these two well-known waterproofing materials will appreciate that the amended period of guarantee does not in any way represent the true life of the materials.

## Daily Mail Competition

Architects registered with A.R.C.U.K. are invited to submit designs for a house to be erected at the 1957 Daily Mail Ideal Home Exhibition to be held at Olympia next March.

The object of the competition is to obtain the most suitable design for a house (approx. 1,900 sq ft) representing the best possible value for money (£5,500 maximum) in planning, construction and fittings and providing for a comfortable standard of living. Prizes of £500, £250 and £100 are offered. The assessors will be: Mr. Arthur W. Kenyon, C.B.E., Mr. Clifford Culpin, Mr. L. E. W. Stokes-Roberts, Organiser of the Daily Mail Ideal Home Exhibition. The last day for receiving entries is 27th September, 1956. Conditions of the competition are available on application to: Daily Mail, Architectural Competition, Gough House, Gough Square, London, E.C.4. No deposit is required from applicants for these conditions.

## Prizes for Public and Secondary Schools

The R.I.B.A. offers annually for competition between boys and girls of Public and Secondary Schools, prizes totalling 20 guineas in value for the encouragement of interest in architecture. The jury will be: Chairman of the Board, Mr. Evelyn Freeth, Mr. R. W. Paine, Mr. Edwin M. Rice, Sir Hugh Casson.

The competition is not open to those who have left school before the end of the Summer Term immediately preceding the closing date for entries.

(a) A prize will be given for the best original essay of not more than 1,000 words illustrated by sketches dealing with building or group of buildings with which the competitor is personally acquainted. It should be understood that the prize is not given for illustrations but for an illustrated essay. In any case no illustration may exceed foolscap size. The essays should indicate personal thought and judgment and should not be guide-book description of a building. The competitors should choose a building they like and should state their reasons for liking it.

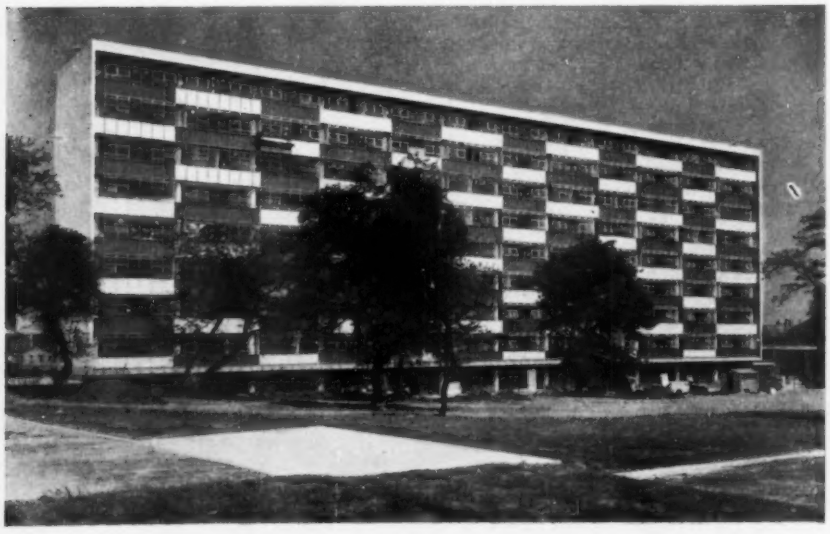
(b) A prize will be awarded for the best sketch or scale drawings of a building or part of a building in pencil, ink or colour. The sketches or scale drawings must be drawn from the original. Copies of photographs or other illustrations are not submissible. If measured drawings of buildings are submitted they must be accompanied by a statement that the buildings have been measured and drawn by the competitor. The original survey notes made on the site, from which the drawings were made, must also be submitted with the finished drawings. The size of each sheet must not exceed 30 ins by 22 ins. The quality of the building will be considered in awarding the prize. The name and position of the building should be stated.

The work submitted in competition for these prizes should be sent flat, not rolled and not folded, to the Secretary, Royal Institute of British Architects, 66 Portland Place, London, W.1, by the *Headmaster or Headmistress of the competitor's school and not by the competitor.*

Drawings and essays must be signed by the competitor and the name and address of his or her school clearly stated, and must be accompanied by a declaration to the effect that the essay and/or drawings are his or her own unaided work. The competitor's age must also be stated.

For the competition in 1956 all work must be sent so as to reach the Secretary, R.I.B.A., 66 Portland Place, W.1, by the 28th September, 1956.

*The front of the L.C.C.'s new secondary school for boys under construction at Tulse Hill. It will be open in September.*



## R.I.C.S. Examination Results

In the professional examinations for 1956, 715 candidates out of 1,615 passed the First Examination, and 689 out of 1,538 passed the Final Examination. In the First and Final Examinations, the following prizes were awarded:—Wainwright Prize and Institution Prize: Mr. M. P. Starkey, Northern Ireland. Driver Prize and Beadel Prize: Mr. J. G. Thompson, Marlow, Buckinghamshire. Galsworthy Prize and Quantities Prize: Mr. D. T. Rigden, London. John Gilchrist Prize: Mr. S. A. Hallewell, Edinburgh. Crawter Prize: Mr. I. Grisenthwaite,

*Continued overleaf*

## News—continued

Stockton-on-Tees. Mellersh Prize: Mr. J. S. Linington, Deal, Kent. Constructive and Working Drawings Prize: Mr. M. J. Walton, Huddersfield. Hyman Marks Prize: Mr. A. Jackson, Kingston-upon-Hull. Harfield Prize: Mr. P. Kefford, Sleaford, Lincolnshire.

### N.F.B.T.E. Summer Meeting

Some 800 members of the Regional Federations outside London and their friends are attending the National Federation Summer Meeting, which, at the invitation of the L.M.B.A., is being held this year in London in recognition of the fact that the President, Mr. Nigel Hannen, is a London man. He was President of the L.M.B.A. in 1949. London members and their ladies attending will bring the total up to well over a thousand.

The National Federation half-yearly meeting is being held in the Royal Festival Hall on Tuesday, July 10th, and on the day before and the day after cricket and golf matches, river trips, and visits to places of interest in old and new London have been arranged. A reception is being given in Guildhall, which the Lord Mayor, with the Lady Mayoress, has promised to attend, and on the final day the L.M.B.A. is giving a dinner to the delegates in Grosvenor House, at which the Bishop of London is to be the guest of honour.

### Change of Address

Cotton, Ballard & Blow, formerly of 133a, Wembley Park Drive, Wembley, Middlesex, now at 5, Baker Street, London, W.1. Telephone WELbeck 3364-7.

## COMING EVENTS

*The Royal Institute of British Architects*

June 25 at 6 p.m. Library Group Meeting. Talk on J. B. Fischer von Erlach by Dr. S. Lang, at 66 Portland Place, W.1.

*Town Planning Institute*

June 28 at 6 p.m. Annual General Meeting, followed by an Address by Charles M. Haar, M.A., LL.B. (L.A.M.), Assistant Professor of Law, Harvard University, U.S.A. At The Livingstone Hall, Broadway, Westminster, S.W.1.

*The Housing Centre Trust*

June 27, 28 and 29. Annual Conference. "Slum Clearance and Redevelopment — The Present Opportunity". Conference Chairman — Sir John C. Wrigley, K.B.E., C.B., at County Hall, London.

## In Parliament

### State Financed Factories

The decision to defer proposals for the provision of new Government-financed factories in development areas was questioned by the Opposition. Mr. Thorneycroft, President of the Board of Trade, stated no decision had been made to defer all those projects, but the Government had over the past few months been considering their policy on the rate of expenditure on factory building, and had arrived at the conclusions announced on June 5. Mr. Jay asked for an assurance that important new schemes for factories in areas that required new industries would not be vetoed just to show a financial saving. Mr. Thorneycroft said that if economies were to be made that meant some adaptation of policy to achieve them; further, that in the Board of Trade, the principal expenditure was in the form of materials for all types of building, and he made no apology economising in departmental expenditure. (June 12).

### Building Controls

The pressure on the Chancellor of the Exchequer to reintroduce building controls as a means of strengthening the Government's financial and economic policy is sustained. Answering a string of questions on the topic, Mr. Macmillan stated he had made his attitude clear in the economic debate on February 20. In his view these matters should be decided on practical and not on doctrinal grounds. That was the principle of "The Middle Way," from which he had never swerved.

Mr. Harold Wilson (Labour) commented that in spite of the harsh measures that had been introduced, including monetary control, there was still an overload on the national economy caused partly by inessential building. If the Chancellor were to apply practical considerations, would he not apply control to that rather than to essential building which he had stopped? Mr. Macmillan said he heard a great deal about the expenditure on petrol pumps, for example, but the actual expendiure in the last year of control was £4 millions, and last year it was £7 millions. When it was remembered that there was twice as many cars as in 1939 there was room for argument. The total of private and miscellaneous building amounted to about eight per cent. of the whole. He was not denying that it might be convenient to have this weapon in the internal armoury under certain conditions; all he was saying was that he tried to judge these matters on a practical and not a dogmatic basis.

A Conservative, Sir Robert Boothby, invited the Chancellor to agree that in the present rather difficult economic circumstances, it was not justifiable to continue building such things as offices, dwelling houses, and petrol pumps without limit. Would it not be desirable to take powers, even if they were very moderately exercised, to prevent completely wasteful expenditure? Mr. Macmillan said this would require legislation.

A Liberal, Mr. Hunter, referred to Press reports that the Chancellor was considering the reintroduction of building licences as an aid to economic and financial policy, and asked if his replies were to be taken as a denial of those reports. Mr. Macmillan quoted what he said in the debate on February 20—"I do not think that either side of the House was very much enamoured of the building control. But I have not ruled it out of my thoughts"—and added "I stick to that." (June 12).

### Russian Methods

Mr. Sandys, Minister of Housing and Local Government, in a short statement on his recent visit to Russia, said he was much interested in the extent to which the Russians were using pre-cast concrete components, and by the way in which they had developed production line methods on the building site. He saw nothing which suggested that the actual techniques employed were in advance of those developed in this country. The main difference was that in the Soviet Union prefabrication and mechanisation appeared to be used on a much larger scale. He had asked his technical advisers to let him have their considered views on Soviet building methods, though it did not, of course, folllow that what was suitable in Russia would necessarily be applicable to conditions and the scale of building operations in this country. (June 12).

### New Town's Housing

The Minister of Housing & Local Government supplied to Mr. Graeme Finlay the following details of private houses and housing sites sold by each of the new town development corporations:—

| | Houses | Sites |
|---|---|---|
| Aycliffe | 1 | 8 |
| Basildon | — | 2 |
| Bracknell | 11 | 12 |
| Corby | 13 | 2 |
| Crawley | 18 | 98 acres for 1,156 houses |
| Cwmbran | 12 | 43 |
| Harlow | 4 | 8 acres for 98 houses |
| Hatfield | 38 | 28 |
| Hemel Hempstead | 5 | 14 |
| Peterlee | — | — |
| Stevenage | — | 6 |
| Welwyn Garden City | 126 | 163 |

The figures cover the period from the setting-up of each Development Corporation until December 31, 1955. (June 12).

*THE ARCHITECT and Building News*, 21 June 1956

# RESEARCH LABORATORIES & CANTEEN, Salfords, Surrey for Mullard Ltd.

*architects*: NORMAN AND DAWBARN
*architect in charge*: PETER A. CLARK

THE site is situated between the London-Brighton road and the railway between Redhill and Horley; it is bounded on the south side by a lane from which access to the site is obtained. The site on the opposite side of the lane also belongs to the Clients and has been laid out as a car park and sports ground.

### Design

The Clients were already established on the site with laboratories in a northlight factory type building and a number of semi-permanent huts and sheds. The architects were asked to prepare a long term scheme for the site to give more laboratory and office space, a new canteen with provision for future laboratory extensions. The northlight structure was to be retained at least for the initial scheme but the other buildings on the site could be cleared.

Two of the buildings to be replaced were the boiler house and the old canteen and in order that these should continue to serve the existing laboratories, it was necessary to plan the Contract in two stages.

The new Canteen, Boiler House, and Services building and a portion of the laboratory block were completed before the remainder of the laboratories and the office block could be started on the site of the old canteen and Boiler House.

A new entry and gatehouse have been provided—it was a requirement that for security reasons there should be only one entry to the site.

Work commenced in May, 1954. The first stage laboratories and Boiler House were occupied in April, 1955, the Canteen in June, 1955.

The 2nd stage laboratories were occupied in January, 1956 and the Contract completed with the office block in June, 1956.

### Canteen: Notes

Designed for 500 meals in two sittings of 250 each. Planned as a two-storey building with the main canteen on the first floor so as not to occupy too great an area of the existing lawn along the Brighton Road side of the site. Structure and cladding similar to Laboratories (see page 686). Canteen floor: Granwood. Kitchen: Quarry tiles. Stairs: Terrazzo. Walls: Plaster painted and papered. Kitchen—tiled dado.

Ceilings: Fibre board. Kitchen—plaster.

*Canteen Block*

*Canteen with clerestory lighting over the centre bay*

## *Mullard Laboratory, Salfords*

### *Laboratory block*

Steel Frame. Roof and 1st floor of precast prestressed units spanning 20ft 0in from the window walls to a spine beam along the line of the corridor. The units have an infilling of clay pots and an *in situ* concrete topping. A crawlway is provided under the ground floor corridor for services.

The external cladding consists of multiple metal windows from rising ground floor slab level to the underside of a precast concrete eaves and gutter unit. The windows are separated by a pressed metal casing covering the stanchions. Rainwater pipes drop within the box formed by the stanchion and the pressed metal casing which is removable.

Internally, structural steelwork is protected with gypsum plaster on expanded metal. Leca block inner walls are provided up to cill height and the window sections in front of these walls are glazed with grey Vitrolite used with the ribbed side outwards. Gable walls are of hand-made facing bricks.

Internal partitions to corridors, plant rooms and certain fixed laboratories are of Leca blocks or bricks but to provide flexibility, much of the laboratory space is sub-divided by Werno (hardboard or timber framing with straw infilling) demountable partitions.

Heating is by L.P.H.W. convectors under the windows.

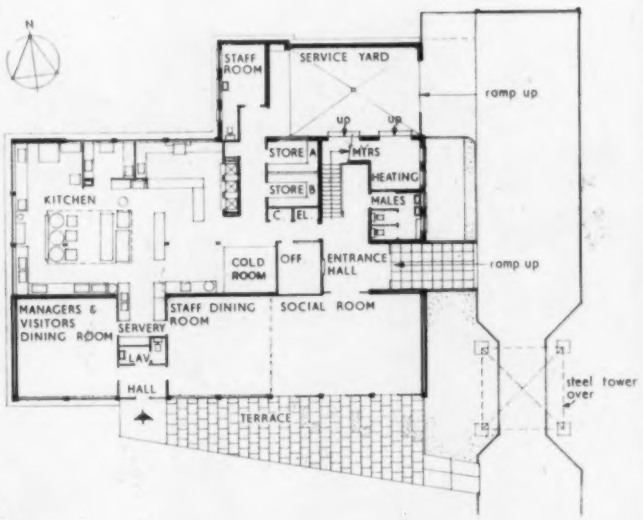
Few of the laboratories have a permanent arrangement of fixed or built-in furniture and a flexible arrangement of services was therefore required. The heating, and various gas and air service mains run in the void above the ground floor corridor ceiling. Electricity, water and drains run in the crawlway. These services distribute by two vertical ducts and floor trenches to the outside walls where the services run continuously under the windows, outlets being available on service shelves between the convector cabinets. Additional service runs occur above the suspended ceiling of ground floor laboratories where branches can rise or drop to island positions.

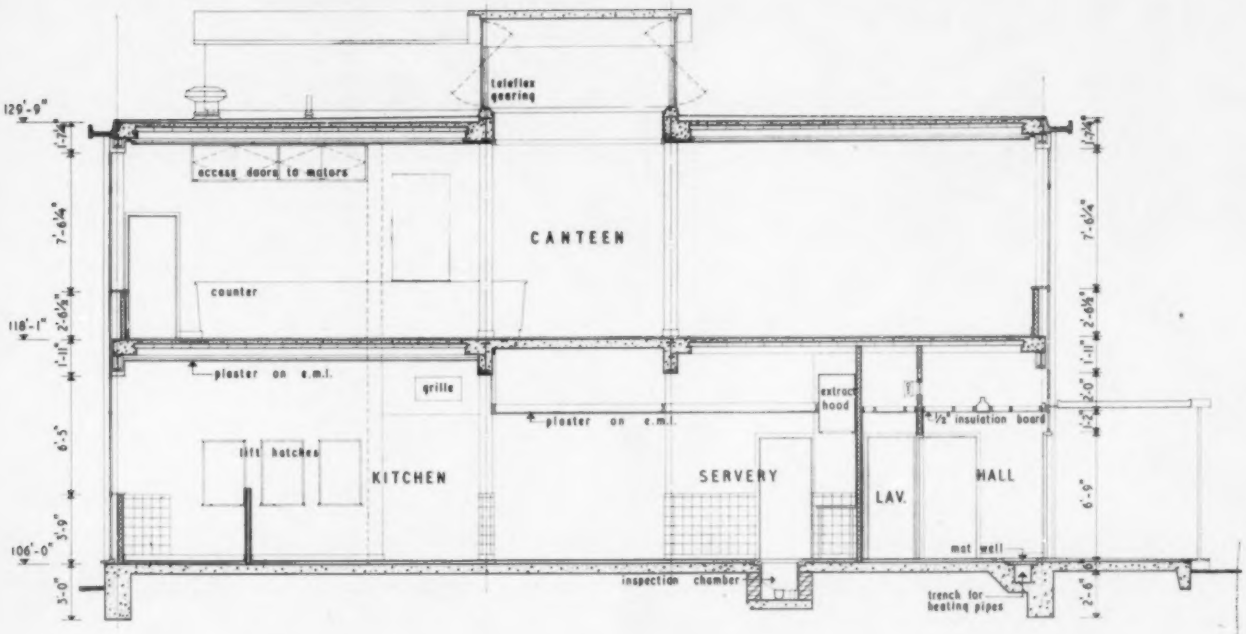
The drains from certain rooms are in polythene so are the extract ducts from fume cupboards and hoods. All laboratory drains run via the crawlway to a dilution and treatment pit at the east end of the block.

One section of the laboratories is planned as a self-contained unit with its own changing rooms and lava-

*Continued on page 688*

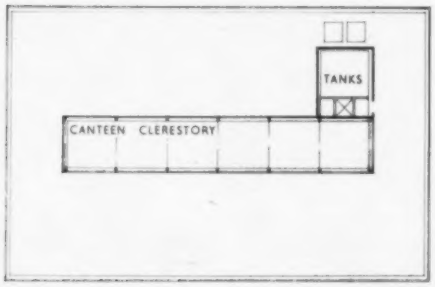
GROUND FLOORS SCALE: 24 FT = 1 IN





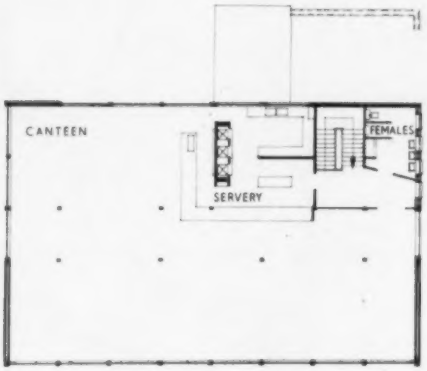

SECTION THROUGH CANTEEN

## CANTEEN BLOCK

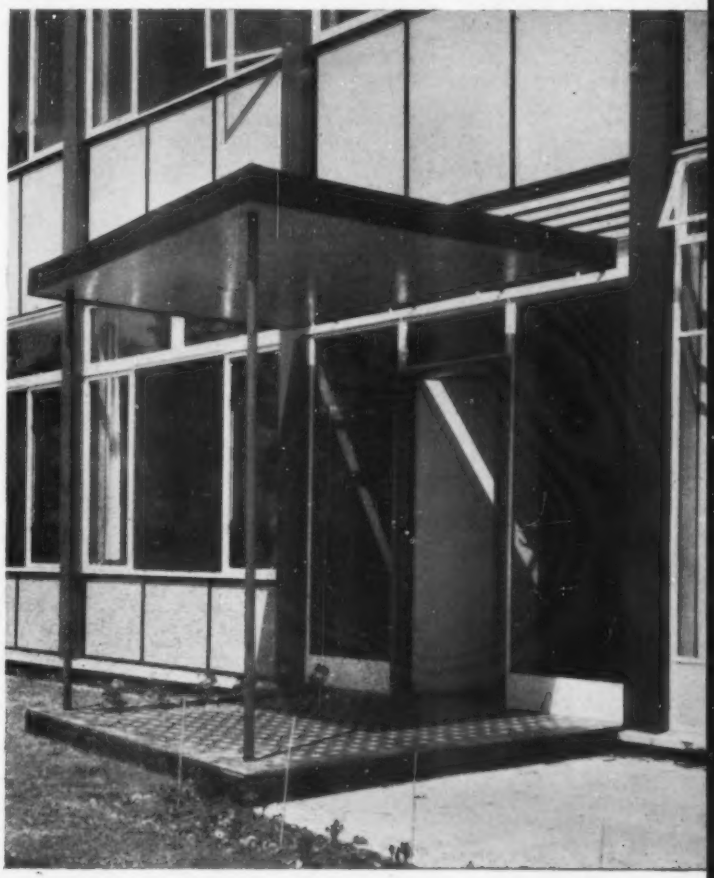



ROOF LEVEL

FIRST FLOOR




*Canteen entrance*



## Mullard Laboratories, Salfords

Continued from page 686

tories. This section is required to provide exceptionally clean conditions, hence air conditioning with sub-micron filtration, double glazing with black-out blinds between the windows, and detailing aimed to provide as few dust-collecting ledges as possible. Walls and floors are tiled; ceilings are of aluminium-faced plywood with aluminium cover strips bedded in mastic.

Certain pumps and other pieces of equipment which might be a source of dust or add to the heat load on the air conditioning plant have been placed in a bulk-head under a fixed bench with access from the corridor. Doors are sliding to reduce air movement and all south facing laboratories have venetian blinds.

Floors: Granwood and Vinyl tiles. Adamantine tiles in Chemistry labs and clean rooms.

Walls: Plastered. Glazed tiling in clean rooms.

Ceilings: Suspended fibre board. Asbestos wood panels in corridors fixed with cups and screws for easy access to services.

Roofs: 3 layers of felt topped with granite chips.

### Offices

Planned as three floors of offices with a reference library and reading room on a fourth floor.

Structure—steel frame with floors and roofs as laboratory block. External stanchions and beams are encased in concrete which has been left fairface and painted. Internally, stanchions and beams which are not in the depth of floors are encased with gypsum plaster on expanded metal.

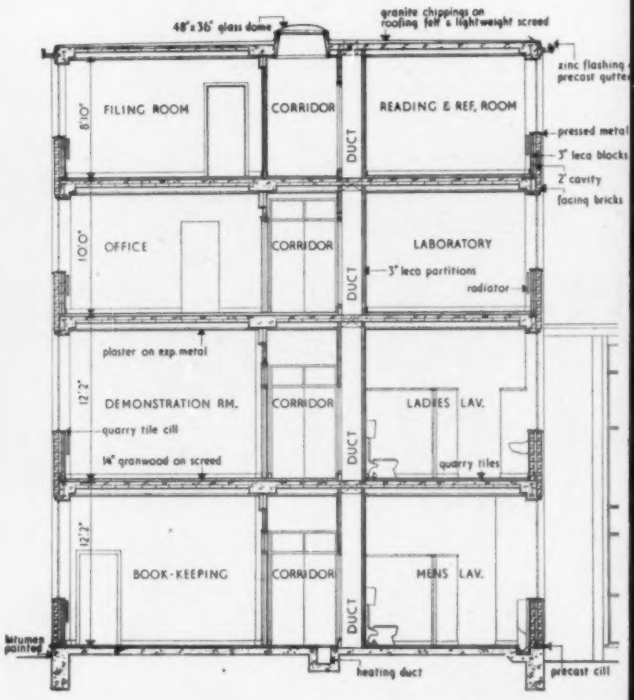
Gable walls of light heather facings. Panel walls

Continued on page 691

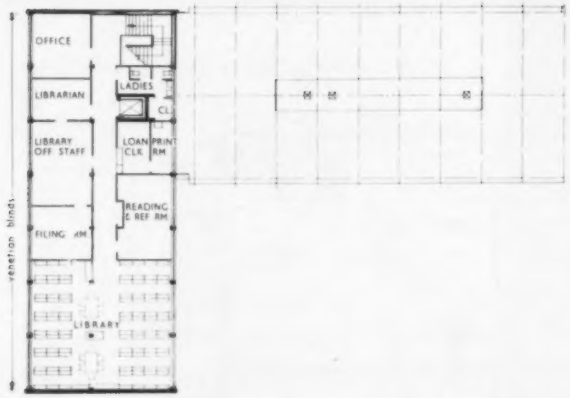
Office wing

Office entrance

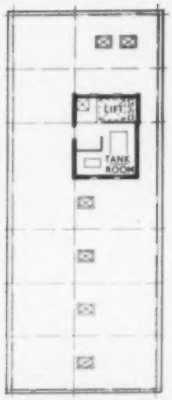
OFFICE SECTION: SCALE 12FT TO 1IN



# OFFICE AND LABORATORY BLOCK

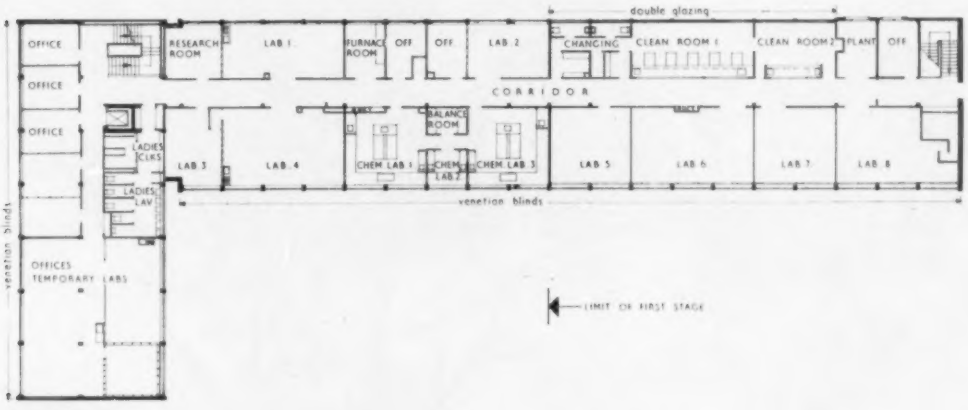



THIRD OFFICE FLOOR

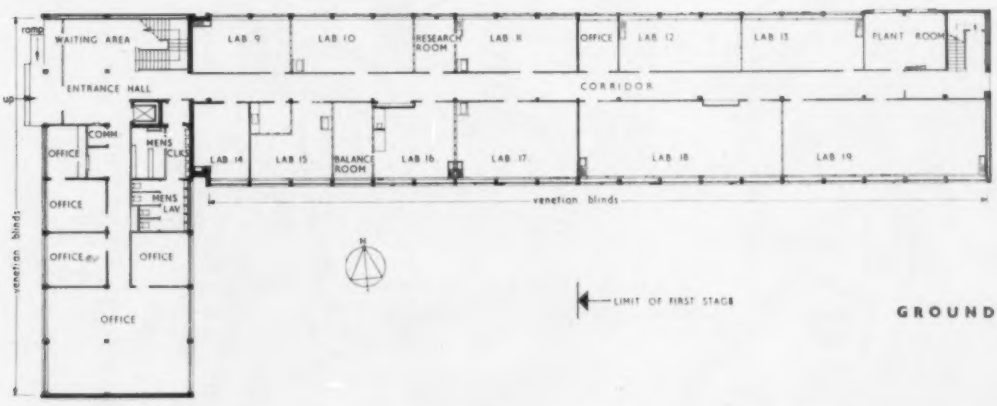



OFFICE ROOF: SCALE 40 FT = 1 IN

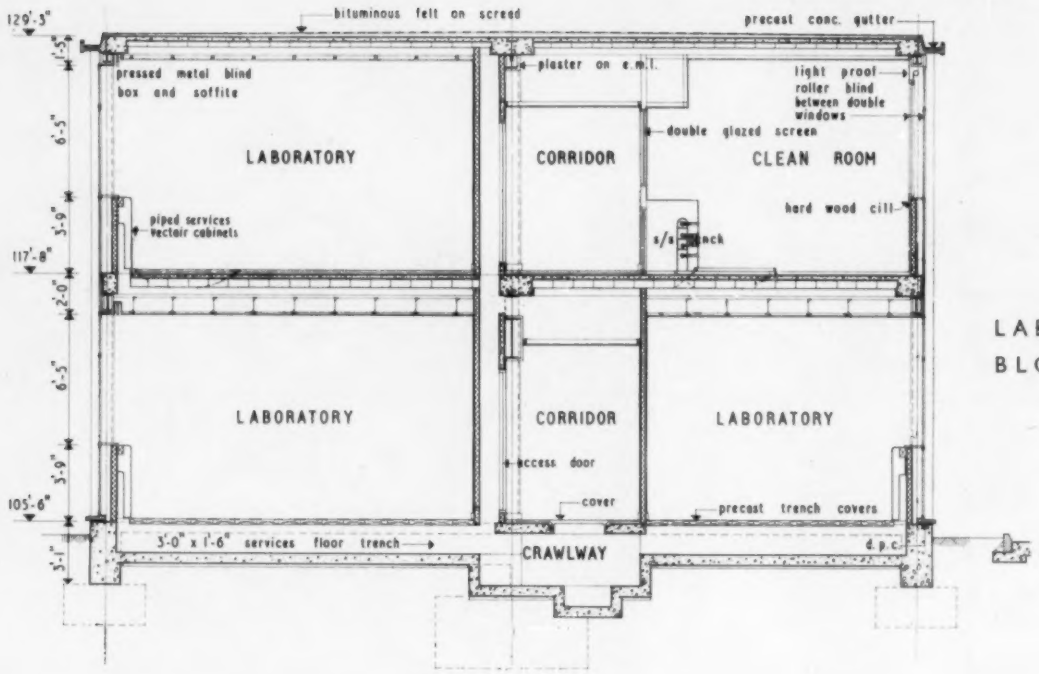
SECOND OFFICE FLOOR AND ROOF OVER LABORATORIES




FIRST FLOOR



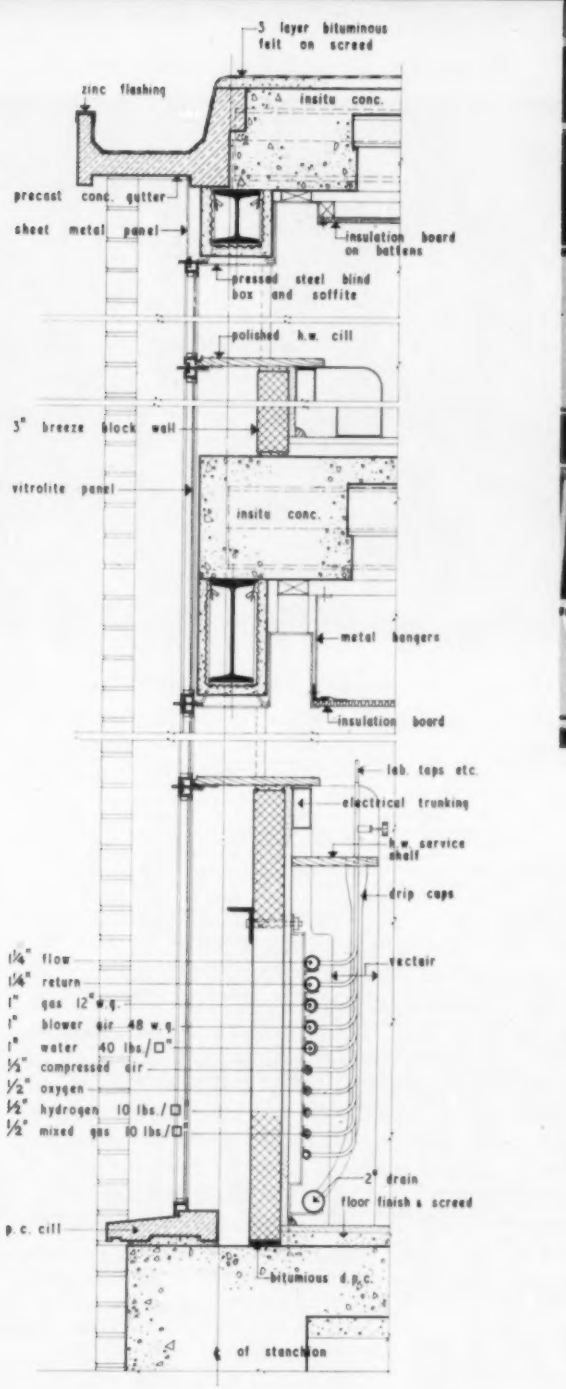

GROUND FLOOR



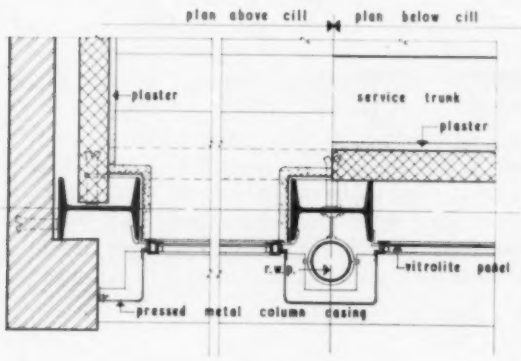

LABORATORY BLOCK

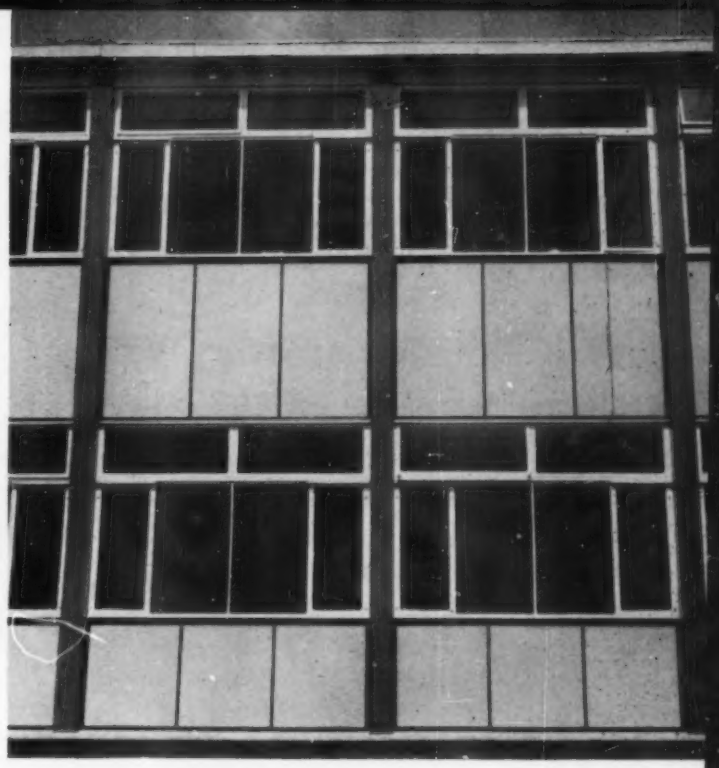
SECTION: SCALE 8 FT TO 1 IN

*The research laboratory block with office block at far end*




WALLS, PLAN AND SECTION: 16 F.S.



*Laboratory cladding*

## *Mullard Laboratories, Salfords*

*Continued from page 688*

under windows of purple flint bricks unbonded.

"Projected" windows with venetian blinds to west elevation. Demountable partitions are Chatwood type of steel and glass.

Floors: Generally—Granwood. Library—Cork tiles. Stairs—Terrazzo. Lavatories—Quarry tiles. Entrance Hall—Vitreous tiles and mosaic.

Walls: Generally—Plaster. Entrance Hall—Facing bricks.

Ceilings: Plaster on expanded metal.

### *Boiler House and Services Building*

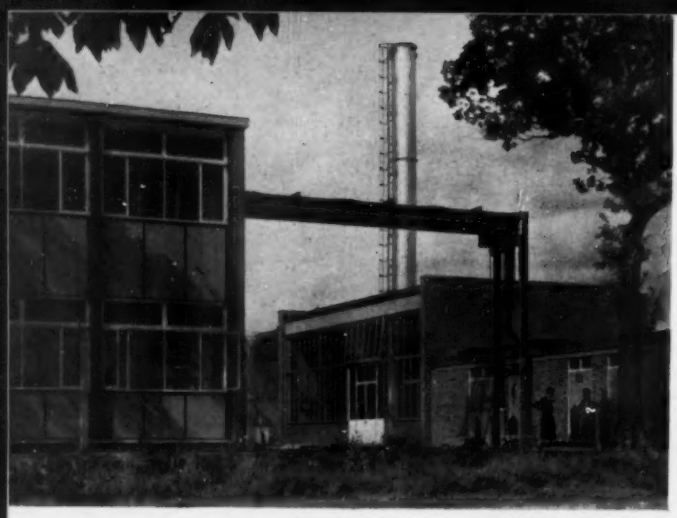
Structure: Steel portals, brick gable walls, steel roof decking. One side of patent glazing above dwarf walls of blue engineering bricks.

10 million B.T.U. boiler, oil-fired, serving new and the existing buildings.

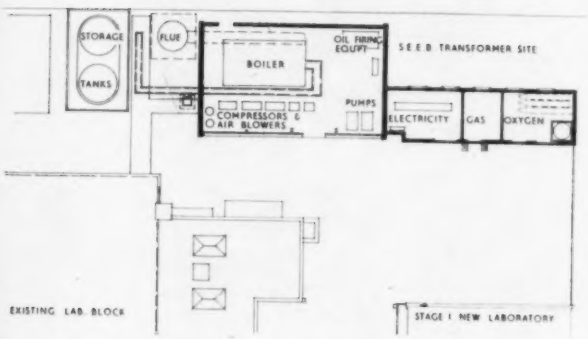
Housed in the boiler house is the plant for producing compressed air, blower air and vacuum for the laboratories. Adjoining is a service building housing the main gas and electricity intakes and meters, a plant for boosting the town gas to a constant pressure and an oxygen evaporator plant.

All heating mains and service pipes cross to the new laboratory building by an overhead pipeway which also serves as a lifting gantry for a 5-ton hoist and a 30 cwt hoisting arm which can travel on to the first floor landing of the laboratory block.

*Continued overleaf*



Boiler house




PLAN: SCALE 40FT TO 1IN

*Quantity, Surveyor:* A. W. BRADLEY

*Heating, services & ventilation consultant*
MULLLARD CENTRAL PLANT DEPARTMENT

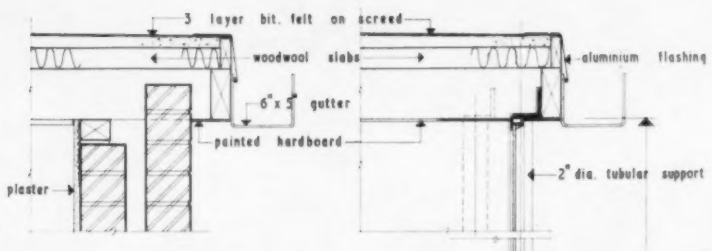
*General Contractor:* Higgs & Hill Ltd.

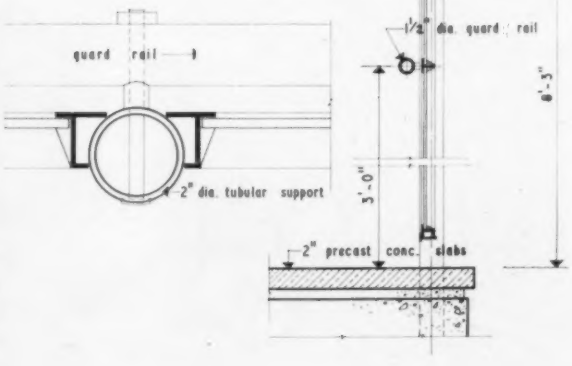
*Subcontractors:*

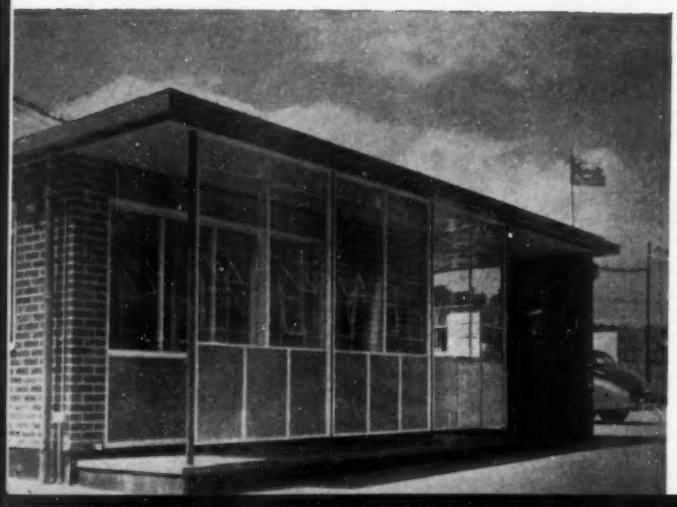
*Air Conditioning*: The Carrier Engineering Co. Ltd. *Acid Resisting lining to dilution pit*: Ancorite Ltd. *Balustrades and Entrance Gates*: Light Steelwork (1925) Ltd. *Blinds—Venetian and Blackout*: Tidmarsh & Sons. *Bricks*: Sydney A. Hunter Ltd. *Boiler Installation*: Edwin Danks & Co. (Oldbury) Ltd. *Cold Room*: D. P. Toomey & Co. Ltd. *Drainage & Fume Cupboard Extracts*: Longstaff & Shaw Ltd. *Electrical Installation*: H. J. Cash & Co. Ltd. *Electric Water Heater*: General Electric Co. Ltd. *Electrodes*: British Insulated Callender's Cables Ltd. *Fire Resisting Door*: Durasteel Ltd. *Gas Installation*: The South Eastern Gas Board. *Glazing*: Vitrolite James Clark & Eaton Ltd. *Granwood Flooring*: The Granwood Flooring Co. Ltd. *Heating Installation*: The Carrier Engineering Co. Ltd. H. J. Cash & Co. Ltd. *Incinerator*: The Wandsworth Electrical Manufacturing Co. Ltd. *Ironmongery*: Comyn Ching & Co. (London) Ltd. *Kitchen Extract*: Clark Lane Engineers (London) Ltd. *Kitchen Equipment*: Benham & Sons Ltd. *Laboratory Fittings*: Sotos Ltd. *Library Shelving*: O. Burkle & Son Ltd. *Lifts*: J. & E. Hall Ltd. *Lifting Hoists*: Herbert Morris Ltd. *Oil Firing Equipment*: Hubbard Combustion Ltd. *Partitions: Demountable*: British Werno Ltd., Chatwood Milner Ltd. *Piped Services*: H. J. Cash & Co. Ltd. *Precast Concrete Gutters and Cills*: Girling's Ferro-Concrete Co. Ltd. *Precast Prestressed Floor Units*: Concrete Development Co. Ltd. *Pressed Metalwork*: Williams & Williams Ltd. *Racks—Clothes*: James Bieber Equipment Co. Ltd. *Sanitary Fittings*: Adamsez Ltd. *Servery Counter*: Lydwood Co. *Sliding Door Gear*: E. Hill Aldam & Co. Ltd. *Steel Roof Decks*: The Ruberoid Co. Ltd. *Storage Tank*: Braithwaite & Co. (Structural) Ltd. *Structural Steelwork*: Dawneys Ltd. *Suspended Ceilings*: The Sundeala Board Co. Ltd. *Tiles*: Decorative Floors Ltd. (Cork). The Marley Tile Co. Ltd. (Thermoplastic). *Terrazzo*: W. B. Simpson & Sons Ltd. The Brockwell Mosaic Co. Ltd. *Turfing and Grass Seeding*: Smart Bros. *Wall and Floor Tiling*: The Brockwell Mosaic Co. Ltd., A. Bleakley & Co. & Successors. *Windows*: Williams & Williams Ltd.

## *Mullard Laboratories, Salfords*

*Gatehouse. Detail of screen*



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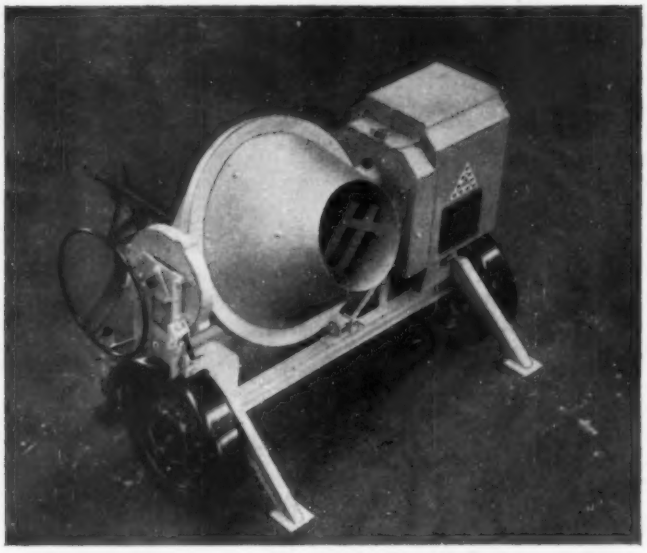


# Contractors Plant III

## Concrete Making and Laying

by W. T. SCOPES, M.I.E.I., M.I.Plant.E.

*THIS article is concerned with the plant necessary for the making and laying of concrete. It deals chiefly with the following articles of equipment: Mixers, batching plants, formwark, vibrators, concrete pumps and pneumatic placers. The next article in this monthly series will cover cranes, hoists and elevators.*

THE two chief components of any concrete mixer are the prime mover and the mixing drum. The prime mover can be operated by petrol or diesel, which lends itself to mobility and also electric power which is usually used in stationary plants. The advancement of the petrol and diesel engine is very considerable, but not so with the drum. The mechanical concrete mixer was born at the end of the 19th century in America at the works of Messrs. Ransome ver Mehr Machinery Co., and some of the first mechanical concrete mixers to be used in this country came from America during the First World War. The design of the present day drum is practically identical with those early models from overseas, so it will be seen that no serious advancement has been made in drum design.

The operation of mixing is to cover every particle of sand and stone with cement and in turn with water. Pre-mechanical mixing, some people will remember the concrete gangs that were to be seen on every building site. A gang consisted of eight men and a water boy, the men turning the aggregate dry and after water had been added turning it again. The action of a shovel is to turn the aggregate upside down and with various other actions the material was no doubt turned sideways. In the mixing drum the shovels are replaced with blades and in many cases the number of blades is eight. There are also buckets which assist in the mixing as well as being the means of emptying the drum. The blades and buckets being scientifically positioned, an end-to-end, top-to-bottom and over and under action is obtained, while during each revolution of the drum the aggregate is turned twice. This type of construction is associated with what is called the rotary drum mixer.

Mixers fitted with tilting drums are fitted with blades; the discharge of the drum being effected by turning the drum into such a position that the material falls out. The disadvantage of this type of machine is that if the drum is stood vertically no mixing will take place.

The pan mixer is an advancement of the mortar pan, the difference being that the mixing rotor is set out of centre of the pan. The discharge is from a door that operates in the bottom of the pan.

Another type of drum is that used by the Continuous Mixing Machine. This drum has blades only and is set an at angle so that the mixer aggregate flows towards the discharge end.

### Methods of loading mixers

This operation comes under two main categories namely, Hand-Shovel Loading or Batch Bin Loading. Hand loading is a very hit-and-miss operation relying on the judgement of the men to load the correct amount of aggregate and consequently the resultant concrete will differ greatly. A Hand/Mechanical method of loading the elevating hopper has been developed, which constitutes a winch, which has a drag pan at the end of the drag rope. The controls of the winch are attached to the handles of the pan, so that the operator of the pan is in control of the winch. The pan is made in varying sizes to suit different volume mixers, and one pan full

**Above: 3½ T size Trailex Junior mixer by Liner Concrete Machinery Co. Ltd.**

## Concrete Making and Laying

is the correct amount of aggregate for the batch. By this method one man loads the mixer, showing a saving of time and manpower. A small portable ramp, high enough to overcome the height of the hopper edge, will be found to be a great advantage, there being no lifting of the pan when it arrives at the hopper.

Batch Bin Loading can be manually operated or fully automatic. With bin loading it is usual nowadays to incorporate a weigh-batcher. Batching Plant as these combined weigh-batchers and bins are called are divided into two types namely, static and mobile. The mobile plants are more generally used in the building industry, while if the job is big enough, it is often economic to use a static plant.

Mechanical loading is the method used by the Continuous Mixer where the aggregate is pushed along to the boot of the elevator by worms of different size, and running at different speeds. The aggregate is fed into troughs through which the worms operate. In this way certain quantities of aggregate are fed into the mixer as well as a set quantity of cement. The troughs can be hand or bin loaded.

### Batching plants

Early Batchplants were equipped with volume batchers and consisted of telescopic boxes each taking a preset volume of either stone or sand. This method was carried on for a number of years, but owing to "sand bulking" it had limitations. When sand is batched by volume, adjustments must be made for bulking and with this type of plant it could not be easily done. In the middle 1930's, weigh-batching was introduced, but for a number of years the advantages of weigh-batching over volume batching were not appreciated. Aggregate when not corrected for bulking can cause a wastage of up to 11 per cent. of cement, and on this fact alone weigh-batching won the battle over volume batching.

There are many makes and variations of weigh-batchers all of which have their good points and at the same time all are the means of producing high-grade concrete.

The fully automatic plants do not come within the sphere of a building contract but are used in connection with large concreting plant of a permanent nature. It is worth noting, in this type of set up, that the control of everything going into the mixing drum is under the operation of one man, who is placed in a control room remote from the plant, and relies on gauges for all his information.

### Layout of plant

No hard and fast rule can be laid down as to how a concreting plant should be laid out, but it is of necessity governed by the existing condition of the site. There are certain points that should be borne in mind when siting the position of concrete mixers. 1. A ready access to a main road for the easy delivery of aggregate and cement. 2. Near a main water supply making sure that the size of the water pipe is large enough to supply the quantity of water that will be required when the mixer is working at its maximum. 3. The mixer should be set up high enough to allow good clearance for whatever type of disposal is to be used. It is bad practice to dig a gulley for lorries or dumpers to run through when loading, as this will become water logged and useless. 4. If at all possible do not site the plant so that a north or north-east wind blows directly on the plant. This will be appreciated in frosty weather.

### Loading the bins

Where large bins are used and the ground area is confined, the loading is often carried out by scraper and elevator. By this method the aggregate can be dumped close up to the bins and as the scraper operates through 180 degrees, a large area is available for storage. Both elevator and scraper are operated by small powered prime movers, so that the cost of elevating the aggregate to the bins is very low when compared with using a large dragline for this work. The general method adopted for loading the small bins is by small dragline using a dragline bucket or grab, or a highlift loading shovel. One maker has developed an elevator-scraper in one unit which is attached to the bins, it being operated by hydraulic power for raising the boom, but manual power for swinging the boom to different positions.

### Cement storage

High cost of manpower and material are the main reasons why the delivery of cement in bulk is gaining favour. This is nothing new and has been in operation for many years on the larger plants, but it is only in recent years that manufacturers have produced silos suitable for the small plants. With the portable type of silo the cement is blown from the wagon into the silo and is fed by gravity into a specially constructed weigh hopper. In one make of silo the operation of opening the silo door, weighing and closing the door is automatic, thereby obviating waste. In the larger circular bins cement is fed from the silo on to a conveyor belt and elevated up a totally enclosed elevator, so that it discharges into the centre bin which is the operating cement container. When using this type of silo the bulk cement is delivered into a hopper which deposits the cements at a uniform rate on to a conveyor belt and is transferred by elevator to the silo.

### Disposal and placing of concrete

The ways of doing this operation are many and varied, but the main consideration should be that the right tool is used for the particular job in hand. When using skips perhaps the best type to use in conjunction with this work is the rolling door. When placing concrete under water the Treme skip cannot be surpassed. There is a special Treme skip made for depositing concrete underwater in very small holes.

The lorry and dumper have a very limited use in

disposal of concrete on a building site and perhaps the most economical way, if any distance has to be travelled is by Mono-Rail. These units require no driver to travel with them and can be operated on scaffolding and will easily travel up a ramp of 1 in 12.

The Concrete Pump is often looked upon as a very intricate piece of machinery, the frightening part being the eccentrics and valve gear. To a man who was trained in steam these machines hold no terror and it can safely be said that a concrete pump is a piece of plant that, providing it is operated and maintained in a normal way, will do its job cheaply and efficiently. These pumps are nothing more than a ram pump and therefore everything that is passed into the cylinder must be pushed out. The operation of the valves is a point that needs watching, because the valve never closes completely; the reason being that if a stone was passing the valve at the time of closing and the valve closed with a click, something would break. The adjustment of the closing of the valve should always be equal to the size of the largest aggregate being used, so that if a stone is passing it will be held and not jammed.

The question is often asked as to whether this or that type of concrete can be pumped and the short answer to this is that providing that the concrete is readily workable it will pump. The words "readily workable" mean that the stone must be held in suspension in a fluid, in other words each stone must be covered by cement paste and held in a floating condition. Stone or sand separately or together will not pump, but when in a floating condition in liquid it will.

The distance that concrete can be pumped depends on the layout of the pipe line and the use of as few bends as possible is an advantage. An efficient pump will pump up to 1,000ft in a straight line, but a good guide is for each 10ft in height the distance is reduced by 100ft.

### Concrete placer

This is the name of a plant that places concrete pneumatically. It is much faster than the pump and will place concrete of whatever slump is required. It consists of a large container into which wet concrete is dumped. The container is then sealed and high pressure air applied. The concrete is forced through a 6in pipe and will travel approximately 1,000ft horizontally or 100ft vertically. The capacity is stated to be 35 cu yds per hour and as there are no moving parts, maintenance is nil. An improvement of this latest design is the discharge box which, by separating the air from the concrete at the point of delivery, permits a steady flow of material on to the job. A special arrangement is incorporated to ensure that the whole of the concrete in the pipe is blown and not only the centre core.

*The Rotor Loader by David Roberts & Co. (Engineers) Ltd. is a fully mobile automatic loader for all types of aggregates up to 3" size. Working in conjunction with "Robel" articulated conveyors it forms a flexible unit capable of charging batching plants at rates up to 50 tons per hour with a single operator and without any other form of machinery.*

### Form work

Steel shuttering has for economic reasons replaced timber which was wasteful of time, labour and material. The main requirements of any steel shuttering can be summarised as follows: 1. Strength and rigidity. 2. A true and even face. 3. The least number of loose ancillary pieces. 4. Ease of handling and capability of standing up to rough work. 5. Standardisation of shapes. 6. Clamps and connections should be capable of quick fixing.

These basic principles are incorporated by nearly all the major manufacturing companies of steel shuttering and by the use of one of the well known makes much time and labour can be saved.

The main uses for this type of material are floors, beams, walls, columns, as well as special forms for road construction and trench lining.

In order that shuttering can be stripped from set work as easily as possible it is necessary that the form plates be brushed over prior to use with a good mould oil. Any reputable oil company can supply this.

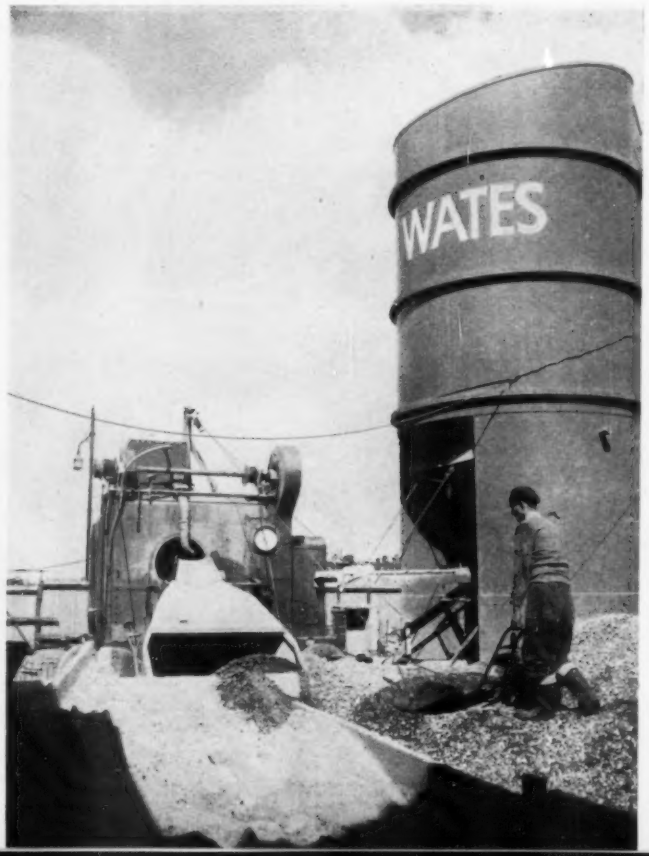
Static form work is well known, but good advantage could be achieved in many cases by the consideration of travelling form work. This usually consists of a travelling carriage running on rails from which the forms are attached, being adjusted into position by adjusting screws. When the shuttering is released the screws are slacked off and the shutters pulled from the concrete face and the carriage moved to the next position.

### Vibrators

With any type of form work vibration of the concrete being placed is essential to ensure that the material consolidates and penetrates into all the corners of the form work. There are two main types of machines available for this class of work, namely electric and pneumatic. In both cases, the vibrator has a totally enclosed motor and the elimination of flexible shafts with the electric machine is a welcome improvement. The larger machines which are used for mass concrete and will handle batches of 2 cu yds at a time give about 7,000 vibrations per minute, while those used for smaller work run at 9,000 v.p.m. The disadvantage of pneumatic machines is the weight of the hose, but this is offset by the fact that you cannot get a shock from a pneumatically operated machine. Vibrators, like all other classes of plant, have special designs for particular types of work and the correct tool used will save money and time. The small vibrators used for attaching to aggregate bins, for the purpose of shaking the aggregate down are well worth consideration, as a means of increasing output by an easier and quicker flow of aggregate to the mixer.

*The Dixon Power Float Machine by Columbia-Dixon Ltd. is shown producing a monolithic topping. Similar results can be obtained direct on to oversite concrete.*

*The "Dalli" handscraper winch by ACE Machinery Ltd. Can inhaul feed 60 ft from stockpile.*



*Concrete aggregate being lowered into the reinforcement which is being positioned by the Fabric Layer devised by British Reinforced Concrete Engineering Co. Ltd. in conjunction with John Laing & Son Ltd.*

**FIRMS MENTIONED IN THE ARTICLE**

*A. C. E. MACHINERY LTD.,*
*Porden Road, Brixton, London, S.W.2. Brixton 3293.*
*ACROW (ENGINEERS) LTD.,*
*South Wharf, Paddington, London, W.2. Ambassador 3456.*
*BENFORD LTD.,*
*The Cape, Warwick. Warwick 503.*
*BLAW KNOX LTD.,*
*94 Brompton Road, London, S.W.3. Kensington 5151*
*BRITISH REINFORCED CONCRETE ENGINEERING CO. LTD.,*
*53 Grosvenor Street, W.1. Grosvenor 8371.*
*CABLE COVERS LTD.,*
*St. Stephens House, Westminster, S.W.1. Whitehall 3616.*
*COLUMBUS DIXON LTD.,*
*Capitol Works, Empire Way, Wembley, Middlsex. Wembley 6001.*
*COMPACTORS ENGINEERING LTD.,*
*65 Effra Road, London, S.W.2. Brixton 4081.*
*CONSOLIDATED PNEUMATIC TOOL CO. LTD.,*
*232 Dawes Road, London, S.W.6. Fulham 7722.*
*CONTRACTORS & INDUSTRIAL EQUIPMENT LTD.,*
*276 Monument Road, Birmingham 16. Edgbaston 3455.*
*FLEXIBLE DRIVE & TOOL CO. LTD.,*
*Edenbridge, Kent. Edenbridge 3385/6.*
*GOODWIN BARSBY & CO. LTD.,*
*St. Margarets Ironworks, Leicester. Granby 501.*
*JAS. GRUNDY & CO. LTD.,*
*Kelvin Steel Works, St. Helens, Lancs. St. Helens 3004.*
*HOLMAN BROS. LTD.,*
*Camborne, Cornwall. Camborne 2275.*
*C. H. JOHNSON (MACHINERY) LTD.,*
*Adswood Road, Stockport.*
*KWIKFORM LTD.,*
*Waterloo Road, Birmingham 25. Acocks Green 1152.*
*JOHN LAING & SON LTD.,*
*Bunns Lane, London, N.W.7. Mill Hill 3636.*
*LINER CONCRETE MACHINERY CO. LTD.,*
*G.P.O. Box No. 12, Park Road, Gateshead 8. Gateshead 72501.*
*MILLARS MACHINERY CO. LTD.,*
*Thorley Works, Bishops Stortford, Herts. Bishops Stortford 694/5.*
*JACK OLDING & CO. LTD.,*
*Hatfield, Herts. Hatfield 2333.*
*FREDERICK PARKER LTD.,*
*Viaduct Works, Catherine Street (Extension) Leicester. Leicester 62531.*
*PORTASILO LTD.,*
*Blue Bridge Lane, York. York 24872.*
*RANSOMES & RAPIER LTD.,*
*Waterside Works, Ipswich, Suffolk. Ipswich 2143.*
*ROAD MACHINES (DRAYTON) LTD.,*
*West Drayton, Middlesex. West Drayton 3221/2/3.*
*DAVID ROBERTS & CO. (ENGINEERS) LTD.,*
*276 Monument Road, Birmingham 16. Edgbaston 3455.*
*STOTHERT & PITT LTD.,*
*Bath, Somerset. Bath 2277.*
*VARRAN PLANT ENGINEERS,*
*15 Riversdale Road, Thames Ditton, Surrey. Emberbrook 3373.*
*WINGET LTD.,*
*Rochester, Kent. Strood 7276.*

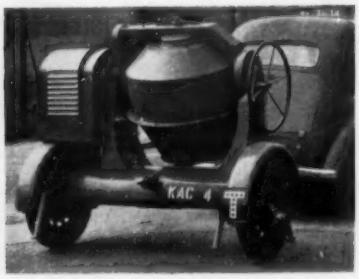
## Approximate Rates of Hire per 44 hour Week

| | | | | |
|---|---|---|---|---|
| Concrete Mixers .... .... .... | 5/3½ .... .... | Open drum without hopper .... .... | £3 | 5 0 |
| (Portable or Electric*) .... .... | 7/5 .... .... | Open drum without hopper .... .... | £3 | 15 0 |
| | | Open drum with hopper .... .... .... | £6 | 3 0 |
| | | Closed drum with hopper .... .... .... | £7 | 5 0 |
| | 10/7 .... .... | Open drum with hopper .... .... .... | £7 | 12 6 |
| | | Closed drum with hopper .... .... .... | £8 | 10 0 |
| | 14/10 .... .... | Open drum with hopper .... .... .... | £9 | 2 6 |
| | | Closed drum with hopper .... .... .... | £10 | 0 0 |

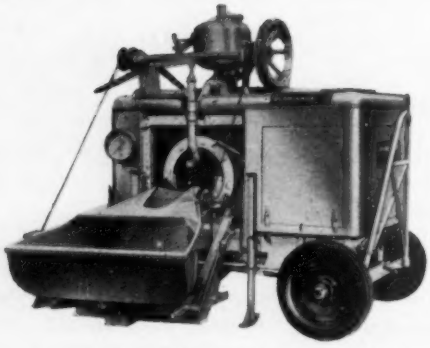
*Diesel as above plus 15/-.

# Mixers

Truck Mixer and Agitator by Ransomes & Rapier Ltd.

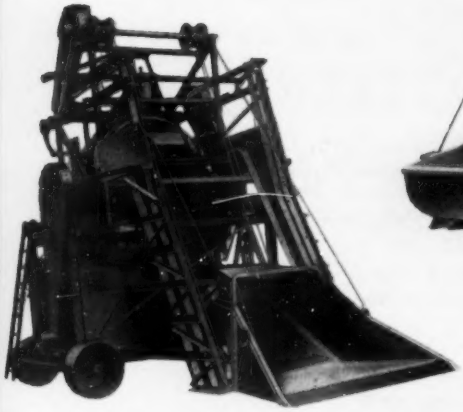


KRLD Trailer Mixer by Benford Ltd.

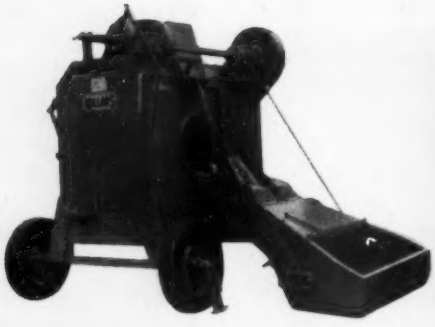


Rex 10s by Blaw Knox Ltd.

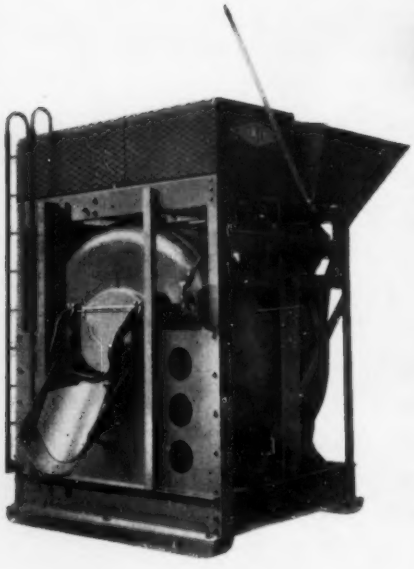
Rex 7s by Blaw Knox Ltd.



Super 56 Victoria by Stothert & Pitt Ltd.



5T by Stothert & Pitt Ltd.



Above:, Anson 7NT by Millars' Machinery Co. Ltd.

Left. Rex 28S by Blaw Knox Ltd.

Right. The Varran by Varran Plant Engineers

## MIXERS

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| BENFORD LTD. | Little Benford "J" | Tilting drum | 3 | 2′ 6″ x 4′ 5″ x 4′ 6″ Weight 2¾ cwt. | 1 h.p. Villiers petrol air cooled | Drum takes ½ bag cement on 1 : 2 : 4 and 1 : 2½ : 5 mixes. 2 pneumatic wheels. Transported by lorry or in trailer. |
| | JR. | Tilting drum slow towing | 3 | 4′ 4″ towing width Weight 3¼ cwt. | as above | As above but may also be towed. |
| | JK. | Tilting drum, fully mobile trailer | 3 | 4′ 4″ towing width Weight 3¼ cwt. | as above | As for model J, but designed for towing up to 30 m.p.h. |
| | JE. | Tilting drum | 3 | As for model J | Electric motor for 200/250 volt A.C. | As for model J. |
| | Benford 5/3½ CRLD. | Tilting drum | 3½ plus 10% | Weight: 10 cwts. | 1½ h.p. Lister air-cooled diesel | Drum takes 1 bag cement on 1 : 2 : 4 and 1 : 2½ : 5 mixes. 4 steel or pneumatic tyred wheels |
| | 5/3½ CRW | as above | as above | as above | 1½ h.p. Petter air-cooled diesel | as above. |
| | 5/3½ CRPD | as above | as above | Weight: 12½ cwts. | 3 h.p. Petter air-cooled diesel | as above. |
| | 5/3½ CRL | as above | as above | 2′ 8½″ x 6′ 1″ x 4′ 11½″ Weight: 9¾ cwt. | 1½ h.p. Lister water-cooled petrol | as above. |
| | 5/3½ CR12 | as above | as above | 2′ 8½″ W x 5′ 5½″ L Weight: 7¾ cwt. | 1.2 h.p. Villiers air-cooled petrol | as above. |
| | 5/3½ KRLD | Tilting drum trailer mixer | as above | Towing width: 6′ 0″ Weight: 10½ cwt. | 1½ h.p. Lister air-cooled diesel | Drum takes 1 bag cement on 1 : 2 : 4 and 1 : 2½ : 5 mixes. Two pneumatic tyred wheels. |
| | 5/3½ KRL | as above | as above | Towing width: 5′ 10″ Weight: 10½ cwt. | 1½ h.p. Lister water-cooled petrol | as above. |
| | 5/3½ KR12 | as above | as above | Towing width: 5′ 6″ Weight: 8½ cwt. | 1.2 h.p. Villiers air-cooled petrol | As above but designed for high speed towing. Discharges on either side. |
| | Benford "One-bag" (1) RA 75 L (2) RA 75 S | Tilting drum | 7 | 3′ 5″ x 7′ 9″ x 5′ 4″ Weight: 15¾ cwts. | (1) 3 h.p. Lister water-cooled petrol (2) 2½ h.p. Lister air-cooled diesel | Drum takes 1 bag cement on 1 : 2 : 4 and 1 : 2½ : 5 mixes. 4 steel or pneumatic tyred wheels. |
| | (1) RA 75 Z (2) RA 75 D | as above | 7 | 3′ 5″ x 7′ 5″ x 5′ 5″ Weight: 15½ cwt. | (1) 2½ h.p. (2) 3 h.p. Petter air-cooled diesel | as above. |
| | RA 75 V | as above | 7 | 3′ 5″ x 6′ 6″ x 5′ 4″ Weight: 12 cwt. | 3 h.p. Villiers air-cooled petrol | as above. |
| | Benford 7/5 G X 7 PD | Hopper elevated loader | 5 | Loader up: 8′ 10″ H x 6′ 0″ W Loader down : 7′ 8″ H x 7′ 11″ W Length: 7′ 3″ Weight: 27 cwt. | 4 h.p. Petter air-cooled diesel | Tipping type water tank. Mixer guarded for operator protection. 4 steel or pneumatic tyred wheels. |
| | Benford 10/7 (1) RFPD (2) RFLD | as above | 7 plus 10% when standing level | loader up: 6′ 10″ x 8′ 3″ x 9′ 9″ Loader down: 10′ 0″ x 8′ 3″ x 8′ 6″ Weight: (1) 31½ cwt. (2) 35½ cwt. | (1) 5 h.p. Petter air-cooled diesel (2) 5 h.p. Lister radiator-cooled diesel | Pivot type loading hopper has 44″ wide back and 55 deg. angle of elevation. Mechanically jolted to prevent aggregate adhering. 4 steel or pneumatic tyred wheels. |

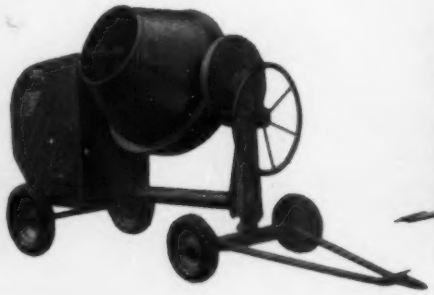
*Blaw Knox 6″ Concrete Pump delivering concrete to the roof, 115 feet above street level, during the construction of Gateway House in the City of London. Contractors Messrs. Trollope & Colls Ltd.*

## Mixers *continued*

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| BLAW KNOX LTD. | Rex Cleanline 7S. | Revolving drum, hopper elevated loader | 7 wet, 10 dry | Loader up : 8′ 0″ x 8′ 8½″ x 8′ 6″ Loader down: 10′ 7″ x 8′ 8½″ x 8′ 6″ Weight: 32 cwt. | Ruston or Petter diesel, Petter petrol or 5 h.p. electric | Three-way lever operated water valve gives positive cut off. Folding hydraulic weigher and mechanically operated skip loader may also be used. May be mounted crosswise on axles or supplied as high-mounted fully mobile unit having discharge height 5′ 6″ above ground. Extended power loader available. 6 buckets and 6 blades. 9 gallon water tank. 4 wheels. |
| | 10S | as above | 10 wet, 14 dry | Loader up: 8′ 6½″ x 8′ 11″ x 8′ 10″ Loader down: 11′ 10½″ x 8′ 11″ x 8′ 10″ Weight: 40 cwts. | As above but 7½ h.p. electric | As above but with 14 gall. tank. |
| | 12S | as above | 12 wet, 17 dry | Loader up: 8′ 11½″ x 8′ 11″ x 8′ 10″ Loader down: 12′ 7½″ x 8′ 11″ x 8′ 10″ Weight: 42 cwts. | as above | as above. |
| | 14S | as above | 14 wet, 21 dry | Loader up: 9′ 6½″ x 9′ 1″ x 9′ 9″ Loader down: 13′ 8″ x 9′ 1″ x 9′ 9″ Weight: 60 cwts. | Ruston 12 h.p. radiator-cooled diesel or 10 h.p. electric | As above but with 8 buckets, 4 blades and 20 gall. water tank. |
| | 28S | Fixed loaded, rotary drum | 28 wet, 40 dry | 7′ 6″ x 11′ 1½″ x 9′ 3¾″ (15′ 1½″ with water tank) Weight: 98¾ cwt. | 25 h.p. electric | Loading height: 8′ 8¾″ Charge and discharge openings 2′ 2½″. Has 12 buckets, 6 blades and 42 gall. water tank. |
| GOODWIN BARSBY & CO. LTD. | (1) Medak (2) Menor | Tilting drum (1) side (2) end discharge | 2 wet, 3 dry | Weight: 4 cwt. | 1 h.p. Villiers air-cooled petrol or electric | Mounted on 2 pneumatic tyred wheels. |
| | Mezah | Tilting drum, side discharge | 3½ wet, 5 dry | Weight: 10½ cwt. | 1½-2 h.p. Petter or Lister air-cooled diesel, Villiers or Petter air-cooled petrol, Lister hopper cooled petrol or electric | 2 steel or pneumatic tyred wheels Discharges on both sides. All working parts totally enclosed. |
| | Mehye | as above | as above | Weight: 10½ cwt. | as above | As above but with 4 wheels. |
| | (1) Melbie (2) Melco | Tilting drum, end discharge | as above | Weight: 10½ cwt. | 1½-2 h.p. Villiers air-cooled petrol or electric | (1) without brakes (2) with brakes for towing. 2 pneumatic tyred wheels. |
| | Meigs | Tilting drum, side discharge | 5 wet, 7 dry | Weight: 16½ cwt. | as Mehye | As for Mehye. |
| | Major | Tilting drum with power operated loaded | (1) 5 wet, 7 dry (2) 7 wet, 10 dry (3) 10 wet, 14 dry | Weights in cwt.: (1) 32-38 (2) 38½-42½ (3) 61-62 | (1) 3-6 h.p. petrol 3-5 h.p. diesel (2) 5-6 h.p. petrol or diesel (3) 6-7 h.p. petrol or 6-8 h.p. diesel | Codewords: (1) Mulpf, Merse (2) Mulqu, Merta (3) Mupat, Merut. Has 4 steel, pneumatic tyred or solid rubber tyred wheels. |
| | Master | Rotary drum, hopper elevated loader | (1) 5 wet, 7 dry (2) 7 wet, 10 dry (3) 10 wet, 14 dry (4) 14 wet, 21 dry | Weights in cwt.: (1) 35-40 (2) 40-44 (3) 48-52 (4) 57-60 | (1) 4-6 h.p. (2) 6-8 h.p. (3) 8-10 h.p. (4) 10-12 h.p. all petrol or diesel Petter or Lister, electric or air motor | Mechanically operated loading skip with shaker gear, lever control discharge chute and automatic water tank. 4 steel pneumatic or solid rubber tyred wheels. All sizes, available as "Tall-master" being raised on a steel frame and having delivery height of 5′ 6″. |
| | Master Trailer | Rotary drum with power operated loading skip | (1) 5 wet, 7 dry (2) 7 wet, 10 dry | Weights in cwt.: (1) 30-34 (2) 35-39 | (1) 4-5 h.p. petrol 5-6 h.p. diesel (2) 6-8 h.p. petrol or diesel, Petter or Lister | Specially designed for towing by fast moving vehicle. |

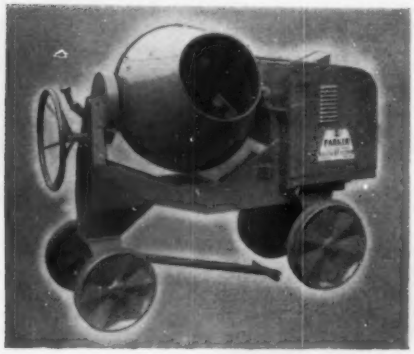
*3½T by Millars' Machinery Co. Ltd.*

*5T by Millars' Machinery Co. Ltd.*



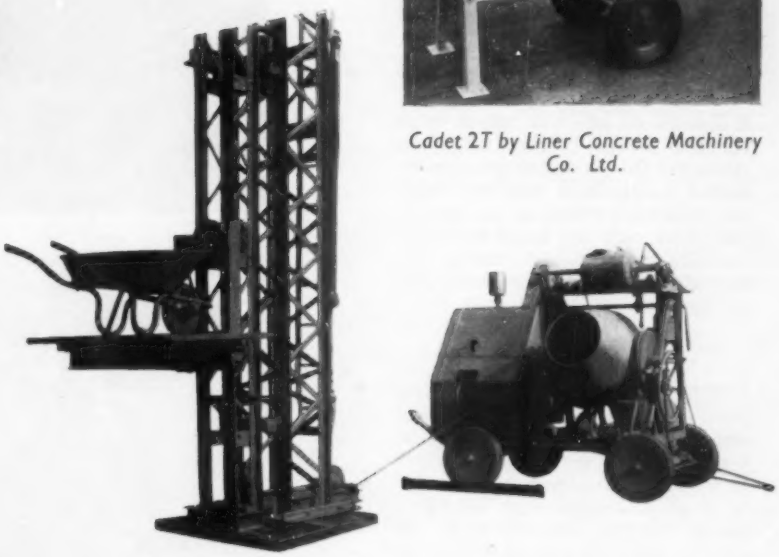
*4′ 6″ overdrive roller pan by Millars' Machinery Co. Ltd.*

# Mixers

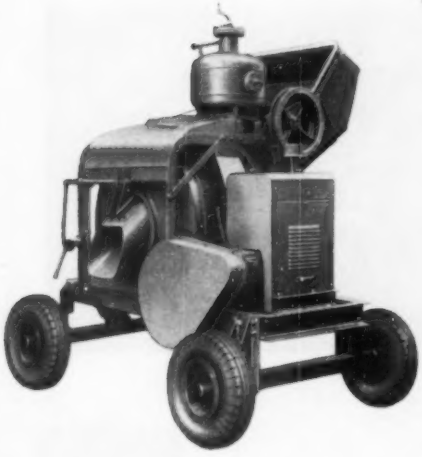


Little Giant 3½T Compact by Fred. Parker Ltd.

Cadet 2T by Liner Concrete Machinery Co. Ltd.



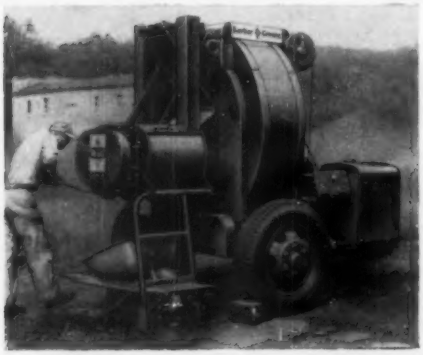
7/5 BH combined mixer and winch by Millars Machinery Co. Ltd.



"Master" non-tilt mixer by Goodwin Barsby & Co. Ltd.

7HNT Hydraulic non-tilt mixer by Liner Concrete Machinery Co. Ltd.

804 Barber-Greene Mixall by Jack Olding & Co. Ltd.



Above. 3/2 Menor by Goodwin Barsby & Co. Ltd.

# Batching

**1.** *The Portasilo by Portasilo Ltd. Left with pullwey extended and right in horizontal position on 2-man handling device. Models range from 10 to 30 tons capacity. Loaded pnuematically from bulk cement tanker. Integral mechanical cement man provides automatic batch weighing.*

1

**2.** *Two 12 cu. yd. twin hopper weigh batching plants, by Road Machines (Drayton) Ltd., equipped with double bucket swing/weigh batcher. When two mixers are employed, one on each side of the plant, the weigh batcher is centrally mounted and loading best carried out by mechanical shovel over the bin ends.*

2

**3.** *28BP Portable batching and mixing plant by Stothert & Pitt Ltd. With diesel or electric drive and may be used with one or two super 28NT Victoria mixers, cement elevator and 3, 4 or 5 compartment aggregate storage hoppers, capacity 40 to 100 cu yds. Plant constructed in units for ease of erection.*

**4.** *Batch hopper of Cement Silo by Acrow (Engineers) Ltd. is here shewn discharging into mixer skip. The Silo is in three sizes having capacities of 15, 25 and 35 tons. Travelling weigh hopper is of 500 lb capacity.*

3

4

**5.** *Universal Weighbatcher by Blaw Knox Ltd. Capacity of standard bulk cement receiving hopper is 7 tons (larger sizes if required). Multi-bucket aggregate loader has maximum output of 60 cu yds/hr. Weighing method is hydraulic and capacity of weigh hopper 26 cu ft.*

5

*A List of Manufacturers:—*

Acrow (Engineers) Ltd.
Blaw Knox Ltd.
Millars' Machinery Co. Ltd.
Portasilo Ltd.
Ransomes & Rapier Ltd.
Road Machines (Drayton) Ltd.
Stothert & Pitt Ltd.

## Mixers *Continued*

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| LINER CONCRETE MACHINERY CO. LTD. | Cadet | Tilting drum | 2 wet, 3 dry plus 10% | Width: 2′ 3″ Weight: 4½ cwt. | 1 h.p. air-cooled petrol | Finger-tip lever drum control. Also available as a towing model. Two wheels. |
| | Junior | as above | (1) 3½ wet, 5 dry (2) 5 wet, 7 dry | Weight: (1) 11½ cwt. or 12½ (2) 14½ cwt. | 1½ h.p. water or air cooled petrol, diesel TVO or electric | Incorporates swing-up engine house and fully invertible drum. (1) Two or four wheels (2) Four steel or pneumatic tyred wheels. |
| | Trailex Junior | as above | 3½ wet, 5 dry | Weight: 13½ cwt. | 1½ h.p. petrol, diesel or paraffin | Mounted on 2 pneumatic wheels with towbar overrun brakes and designed for high speed towing. |
| | Rolpanit | Roller pan | (1) 5, (2) 6½ 8 (3) 12, (4) 14 (5) 16 | Weights from 22 to 93 cwt. | 4, 5, 8, 10 and 12½ h.p. petrol, diesel or electric | Pan sizes: 3′ 6″, 4′ 6″, 5′ 6″, 6′ 3″, 7′ 3″. First 3 sizes available as portable. All sizes as fixed motor driven without loader and all but 3′ 6″ size as fixed motor driven with power batch loader. |
| | Cloverleaf | Elevated hopper loader | (1) 5 wet, 7 dry (2) 7 wet, 10 dry | Weights 29 and 36 cwt. | (1) 3½ h.p. petrol (2) 5 h.p. petrol paraffin or diesel | Mounted on 4 steel or pneumatic tyred wheels. Water tank fitted. Except when in gear, the brake is always automatically on. |
| | Hydraulic | Non-tilt mixer Hydraulic hopper elevated | 7 wet, 10 dry | 10′ 6″ (hopper down) x 8′ 1″ x 9′ 6″ (hopper up) Weight: 40 cwt. | 6 h.p. diesel | Has hydraulic-operated hopper. Has 60 deg. discharge angle. Discharge height 2′ 4″. Has 4 steel rubber or pneumatic tyred wheels. |
| MILLARS MACHINERY CO. LTD | 3½ T | Tilting drum | 3½ | 4′ 1″ working (3′ 5½″ over wheels) x 6′ 7½″ (9′ 6¼″ draw bar extended) x 5′ 4″ (4′ 9½″ for transport) Weight: 10½ cwt. | 1½ h.p. diesel or petrol | With either 2 or 4 steel or pneumatic tyred wheels. Feeding height 3′ 6″. Discharge height 2′ 0″. |
| | 5T | Tilting drum | 5 | 4′ 4″ working (3′ 10½″ over wheels) x 7′ 7½″ (11′ 1″ drawbar extended) x 5′ 9″ (5′ 1½″ for transport) Weight: 15½ cwt. | 1½ h.p. diesel or petrol | 4 steel or pneumatic tyred wheels. Feeding height 3′ 11″ Loading height 2′ 0″. |
| | Anson 7NT | Non-tilting drum | 7 | 7′ 0″ (10′ 4″ loader lowered) x 11′ 9″ x 8′ 9″ (loader raised), 8′ 0″ (lowered) Weight: 38/41 cwt | Ruston diesel or Bamford petrol | 4 steel or pneumatic tyred wheels. Discharge height 2′ 4″. Incorporates automatic shaker gear. 8 gall. water tank. |
| | 7/5 BL. | Tilting drum elevated loader | 5 | 6′ 4″ (8′ 7″ loader lowered) x 8′ 0″ (11′ 9″ over drawbar) x 8′ 4″ (Bucket at top) Weight: 31 cwt | 3½ h.p. Bamford or Lister hopper cooled petrol 3½ h.p. Bamford or Petter radiator cooled diesel | As above but discharge height 2′ 0″ and 7 gall. tank. |
| | 7/5 BH. | as above but Combined with winch | 5 | As above but length 8′ 6″ and 12′ 3″ over drawbar. Weight 37½ cwt | Ruston radiator cooled diesel | As above. Incorporates small barrel winch integral with the mixer and driven from same power unit. Winch capacity: 5 cwt at 150 f.p.m. on single part or 75 f.p.m. on two part rope. |
| | 10/7 B.L. | Tilting drum elevated loader | 7 | 6′ 9″ bucket up (9′ 3″ down) x 9′ 1″ (12′ 8″ with drawbar) x 8′ 7″ bucket up (7′ 11″ down) Weight: 35 cwt | 5 h.p. petrol or diesel (radiator or hopper or air cooled) | 4 steel or pneumatic tyred wheels. Discharge height 2′ 0″. Incorporates automatic shaker gear. 8 gall. water tank. |
| | 4′ 6″ Overdriven | Roller pan mixer | 5 (Sand/lime) mortar) 4 (black mortar) | 4′ 10″ x 8′ 9″ (11′ 4″ with drawbar) x 7′ 0″ Weight: 42 cwt | 5 h.p. petrol or diesel | Mounted on 4 steel wheels. Adjustable pan rollers. Discharge height 1′ 2″. 8 gall. water tank. |
| | Vanguard 10 NT. | Non-tilting drum elevated loader | 10 | 8′ 2″ (12′ 0″ loader lowered) x 13′ 4″ over drawbar x 10′ 3″ (9′ 1″ loader lowered). Weight: 56 cwt | 7½ h.p. Ruston radiator cooled diesel | 4 steel or pneumatic tyred wheels Discharge height 2′ 7″ Incorporates automatic shaker gear. 12 gall. water tank. |
| | 28 NT. | Stationary Non-tilting drum | 28 | 9′ 0″ x 10′ 6″ x 11′ 6″ Weight: 90 cwt | Diesel or electric | Batch hopper has 42 cu ft capacity 30 gallon water tank. Inlet valve for connecting to main or other water supply. |
| JACK OLDING & CO. LTD. | Barber-Greene 804 Mixall | Rotary drum elevated skip loader | 3 | 7′ 11″ x 13′ 1½″ x 8′ 3½″ Weight: 60¾ cwt | Petrol, diesel or electric | Suitable for low slump concrete. Incorporates twin shaft pugmill. Two pneumatic tyred wheels suitable for towing. Shovelling height 1′ 2″. 50 deg. dumping angle. |
| FREDERICK PARKER LTD. | Little Giant 3½T Compact | Tilting drum | 5 dry; 3½ wet | 2′ 8″ (3′ 2″ tilted) x 4′ 2″ x 5′ 4″ Weight 6½/7 cwt | 1½ h.p. petrol | 2 metal or pneumatic tyred wheels (fast trailing model). |
| | Little Giant 3½T | as above | as above | (1) 2′ 9″ (3′ 2″ tilted) x 6′ 5″ x 5′ 4″ (2) 2′ 11″ (3′ 2″ tilted) x 6′ 5″ x 5′ 4″ (3) 6′ 5″ x 5′ 9″ x 5′ 4″ Weights: 9½/11 cwt | 1½ h.p. petrol diesel, T.V.O. or electric | (1) 4 wheels, (2) 2 wheels, (3) Fast trailing. Geared tilting and handwheel control. |
| | Speedia 5D | Tilting drum, pivot type loading hopper | 5 | 4′ 7½″ (7′ 4½″ hopper down) x 7′ 4½″ x 7′ 9½″ Weight: 27 cwt | 3½ h.p. petrol or diesel or electric | Discharge height 2′ 3″. Water tank 10 galls. 4 steel or pneumatic tyred wheels for towing. |

## Mixers Continued

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| FREDERICK PARKER LTD. | 5DH | as for 5D | 5 | Measurements as for 5D Weight: 42 cwt | 6 h.p. petrol or diesel or electric | As for 5D but with barrow hoist lifting 8 cwt at 80 to 100 f.p.m. |
| | 7D | as above | 7 | 5′ 2″ (8′ 4″ hopper down) x 8′ 1″ x 8′ 10″ Weight: 37½ cwt | 5 h.p. petrol or diesel or electric | Discharge height 2′ 5″. Water tank 11 galls. 4 steel or pneumatic tyred wheels for towing. |
| | 7DH | as above | 7 | Measurements as above. Weight: 53 cwt | 7 h.p. petrol or diesel or electric | As above but with barrow lifting hoist 10 cwt at 80 to 100 f.p.m. |
| | 10D | as above | 10 | 5′ 6½″ (9′ 2″ hopper down) x 8′ 2″ x 9′ 9″ Weight: 51 cwt | as above | Discharge height 2′ 9″. Water tank 19 galls. 4 steel or pneumatic tyred wheels for towing. |
| | Non-Tilt 7S | Rotary drum, elevated loader | 7 | 7′ 2″ (10′ 2″ hopper down) x 7′ 11″ x 8′ 3″″ (8′ 7″ hopper raised) Weight: 32 cwt | 6/8 h.p. petrol or 8/10 h.p. diesel | Discharge height 2′ 6½″ Water tank 9½ galls. 4 steel or pneumatic tyred wheels. Also supply 7S as two wheeled mobile model. |
| | 7SH | as above | 7 | Measurements as above. Weight: 44 cwt | 8/10 h.p. petrol or diesel | Discharge height 2′ 6½″. Water tank 9½ galls. 4 steel or pneumatic tyred wheels. Incorporates barrow hoist to lift 8 cwt. 80/100 f.p.m. |
| | 10S | as above | 10 | 7′ 7″ (10′ 9″ hopper down) x 8′ 4″ x 8′ 10″ (9′ 0″ hopper raised) Weight: 38 cwt | as above | Discharge height 2′ 6½″. Water tank 13 galls. 4 steel or pneumatic tyred wheels. |
| | 4′ 6″ | Overoll pan | 6/8 | 5′ 3″ x 8′ 9″ x 6′ 8″ Weight: 38 cwt | 3½ h.p. petrol | Available as fixed or portable model. Overhead drive by bevel and pinion. |
| | 4′ 6″ | as above | 6/8 | as above Weight: 39 cwt | 5 h.p. petrol or diesel | as above. |
| | 5′ 6″ | as above | 10/12 | 6′ 0″ x 10′ 5″ x 6′ 11″ Weight: 50 cwt | 8 h.p. petrol or diesel | as above. |
| RANSOMES & RAPIER LTD. | 3½T | Tilting drum | 3½ | 3′ 0″ x 6′ 4½″ x 5′ 11″ Weight: 14 cwt (13 cwt with 2 wheels) | 1½ h.p. petrol or diesel water cooled or T.V.O. or electric | 4 steel or pneumatic tyred wheels 2 wheel model also available. Discharges on both sides. |
| | 5T Junior | as above | 5 | 3′ 0½″ x 6′ 4″ x 6′ 3″ Weight: 14 cwt | 1½ h.p. petrol, hopper cooled. | 4 steel or pneumatic tyred wheels Automatic water tank available. |
| | 7T | Tilting drum, hopper elevated loader | 7 | 6′ 6″ hopper raised (11′ 2″ max.) x 9′ 8″ x 10′ 1½″ hopper raised (8′ 6″ lowered) Weight: 41 cwt | 6 h.p. petrol or diesel | Mounted on 4 steel wheels. 8 gall. water tank. Skip shaker may be incorporated also pneumatic tyred wheels. Available for side or end discharge. |
| | 7NT | Non-tilting rotary drum hopper elevated loading | 7 | 11′ 8″ (7′ 3″ hopper raised) x 8′ 11″ (8′ 6″ hopper lowered) Weight: 39½ cwt | 6 h.p. petrol or diesel, T.V.O. or electric | 4 steel or pneumatic tyred wheels. Skip shaking gear, 8 gall. water tank. |
| | 10NT | as above | 10 | 12′ 7″ (7′ 11″ hopper raised) x 9′ 7″ x 9′ 9″ (9′ 6″ hopper lowered) Weight: 52 cwt | 9 h.p. petrol or diesel, T.V.O. or electric | As above but with 12 gall. tank. |
| | 14NT | as above | 14 | 14′ 1″ (8′ 8″ hopper raised) x 11′ 1½″ x 10′ 7½″ (10′ 5½″ hopper lowered) Weight: 80 cwt | 12 h.p. petrol or diesel T.V.O. or electric | As above but with 14 gall. tank |
| STOTHERT & PITT LTD. | 3½T | Tilting drum | 3½ | 4′ 0″ x 9′ 0″ x 5′ 9″ Weight: 11 cwt | 1½ h.p. water or air cooled petrol. Electric T.V.O. or diesel | 4 steel or pneumatic tyred wheels. Two-wheel model also available. |
| | 5T hand fed | Tilting drum | 5 | 4′ 4″ x 7′ 3½″ x 6′ 1½″ Weight: 14 cwt | 1½ h.p. water or air cooled petrol also diesel or electric | 4 steel or pneumatic tyred wheels. Bevel gearing from drum driving shaft to drum. |
| | 5T loader fed | Tilting drum hopper elevated loading | 5 | 8′ 10½″ x 11′ 11″ x 9′ 0″ Weight: 30½ cwt | 4 h.p. water or air cooled petrol or diesel also electric | 4 steel wheels. Incorporates 8 gall. water tank. |
| | 5NT | Non-tilting rotary drum, hopper elevated loading | 5 | 4′ 5½″ x 8′ 1½″ x 8′ 5½″ Weight: 30½ cwt | 5 h.p. petrol or diesel | 4 steel wheels (rubber tyred available). Incorporates automatic shaker gear. Hoist winch if required. 8 galls. water tank. 2 wheel model available. |
| | 7NT | as above | 7 | 5′ 5½″ x 8′ 11½″ x 8′ 7″ Weight: 39 cwt | 6 h.p. petrol or diesel | As above. |
| | 10NT | as above | 10 | 6′ 2½″ x 9′ 2½″ x 9′ 10″ Weight: 48 cwt | 7 h.p. petrol or diesel | As above but no 2 wheel model. Water tank 16 galls. |
| | Super 14 Victoria | Rotary drum (1) pivot loader (2) Rising loader | 14 | (1) 16′ 7½″ x 16′ 7½″ x 15′ 0½″ Weight: 71 cwt (2) 13′ 6½″ x 10′ 9½″ x 11′ 0″ Weight: 95 cwt | 10 h.p. petrol or diesel Electric also | Mounted on 4 wheels. Also available on high truck for 5′ 6″ discharge. Syphon water tank. 28 and 56 cu ft models also supplied. |
| VARRAN PLANT ENGINEERS | The Varran | Direct rotary barrow mixer | 3 dry, 2 wet | 2′ 4″ x 4′ 6″ x 4′ 6″ Weight: 3½″ cwt | ½ h.p. electric | Mixing takes place in the barrow which has a circular pan body of 16 gauge. Loading of materials takes place away from the machine by special hand skip. The narrow rotating blade is lowered into the barrow and the blade then rises and falls whilst rotating thus agitating and mixing at the same time. |

# Vibrators

**1.** *E.40 electric vibrator by Compactors Engineering Ltd. Vibration frequency 9,500 to 10,000 v.p.m. 12 or 18 ft. flexible shaft.*

**2.** *C.P. 5180 vibrator by Consolidated Pneumatic Tool Co. Ltd. Pneumatic operation with air consumption under 85 cfm. Weight 92½ lbs.*

**3.** *CCL-Tremix petrol driven vibrator by Cable Covers Ltd. 17,000 vibrations/min. Interchangeable with electric unit.*

**4.** *Humdinger electric vibrator by ACE Machinery Ltd. 2½/3 h.p. motor for all voltages. Frequency 11,500 v.p.m.*

**5.** *Model 3 Poker vibrator by C. H. Johnson (Machinery) Ltd. (Also shown Fig 8. being used on sea defence works on South East coast). Power unit 4 h.p. petrol engine or 3 h.p. electric motor—interchangeable.*

**6.** *C.C2 pneumatic compactor by Holman Bros. Ltd. Compacting widths 8ft 6in or 11ft 6in. Weight 260 or 290 lbs.*

**7.** *Wacker Popular vibrator by David Roberts & Co. (Engineers) Ltd. Weight 30 lbs., frequency 9,000/11,000 v.p.m. Powered by 2 stroke engine*

**9.** *Baxtul road screed vibrator by Flexible Drive & Tool Co. Ltd. with 1¾ h.p. petrol engine. For screed boards up to 22ft. long.*

*A List of Manufacturers :— ACE Machinery Ltd. Cable Covers Ltd. Compactors Engineering Ltd. Consolidated Pneumatic Tool Co. Ltd. Flexible Drive & Tool Co. Ltd. Holman Bros. Ltd. C. H. Johnson Machinery Ltd. David Roberts & Co. (Engineers) Ltd. Stothert & Pitt Ltd. Winget Ltd.*

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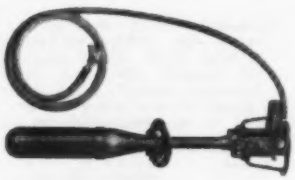

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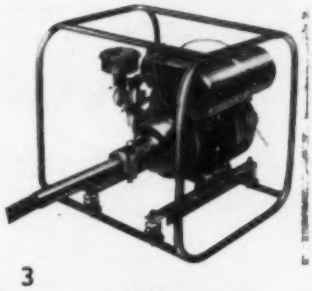

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## Mixers Continued

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| WINGET LTD. | 2T | Tilting Drum | 3.2 | 2' 5½" x 4' 2" x 4' 2½" Weight: 3¼ cwt | .9 h.p. Villiers or 1.22 h.p. JAP petrol or electric | 2 pneumatic tyred wheels. Loading height 2' 8½". Discharge height 2' 0½". Suitable for towing. |
| | 3½T | as above | 3½ wet | 3' 3" x 6' 7" x 5' 5" Weight: 13½ cwt | 1½, 1½, 1¾, h.p. petrol or diesel, air or water cooled | 4 steel or pneumatic tyred wheels. Loading height 3' 6", discharge height 2' 4". Also available as stationary unit for electric drive. |
| | 5T | as above | 5 wet | 3' 7" x 7' 1" x 5' 8" Weight: 16½ cwt | 2¼ h.p. petrol, water cooled, 1¾ or 2½ air cooled diesel | 4 steel or pneumatic tyred wheels. Loading height 3' 5". Discharge height 2' 0½". |
| | 3½T Trailer | as above | 3½ wet | 6' 5½" x 6' 9½" x 5' 5½" Weight: 13½ cwt | 1½, 1½, 1¾, h.p. petrol or diesel, air or water cooled | 2 pneumatic tyred wheels. Designed for high speed towing. |
| | 7T HR | Hopper fed, tilting drum | 7 | 6' 2½" (10' 2½" hopper down) x 8' 9½" x 7' 4" (10' 5½" hopper up) | Petrol, diesel, TVO, or electric | 4 steel or pneumatic tyred wheels. Angle of discharge 60 deg. Loading height 1' 0", discharge height 2' 6". |
| | 7NT | Non-tilt rotary drum | 7 | 7' 2" (10' 10" Loader down) x 9' 3" x 8' 4" (8' 2" Loader down) Weight: 43 cwt | 8 h.p. petrol or diesel, air or water cooled | 4 steel or pnuematic tyred wheels. Loading height 10". Discharge height 2' 5". Hand operated hopper shaker. Also supplied as raised discharge model. |
| | 10NT | as above | 10 | 7' 8" (12'0" loader down) x 9' 6" x 8' 7" (9' 6" loader up) Weight: 55 cwt | 10 h.p. as above | As above but loading height 1' 0", discharge height 2' 7" |
| | 14NT | as above | 14 | 9' 9" (13' 4" loader down) x 11' 7" x 9' 8" (10' 6" loader up) Weight: 61¼ cwt | 12 h.p. as above | As above but loading height 1' 3", Discharge height 2' 11". |
| | 10HTH | Weigh batching tilting drum mixer. Hydraulic operation | 10 | 7' 4" x 7' 5" (11' 4" working length) x 8' 6" (12' 0" loader up) Weight: 50/55 cwt | 8/10 h.p. petrol or diesel or electric | 4 steel wheels. Loading height 1' 2" discharge height 2' 11". Angle of discharge 65 deg. Weigh batching mechanism built into mixer. |

Mark II by Kwikform Ltd.

## Formwork

List of Manufacturers:—

Acrow (Engineers) Ltd.

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Contractors and Industrial Equipment Ltd.

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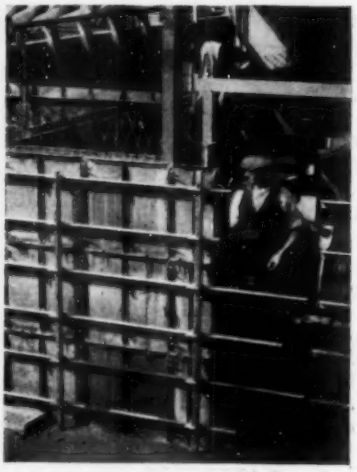
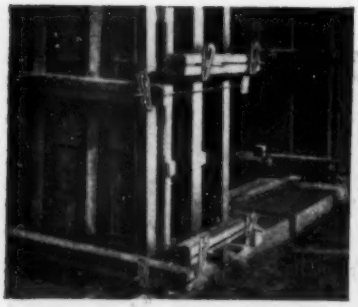


Blawform by Blaw Knox Ltd.

Road Curves by Acrow (Engineers) Ltd.



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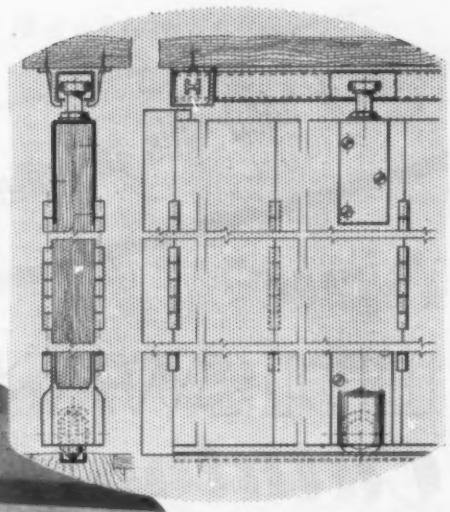

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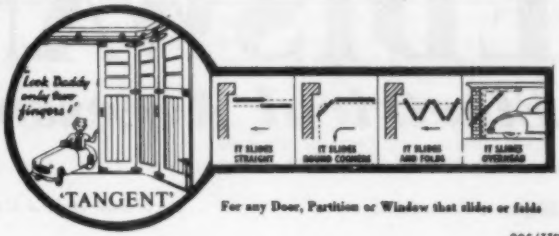


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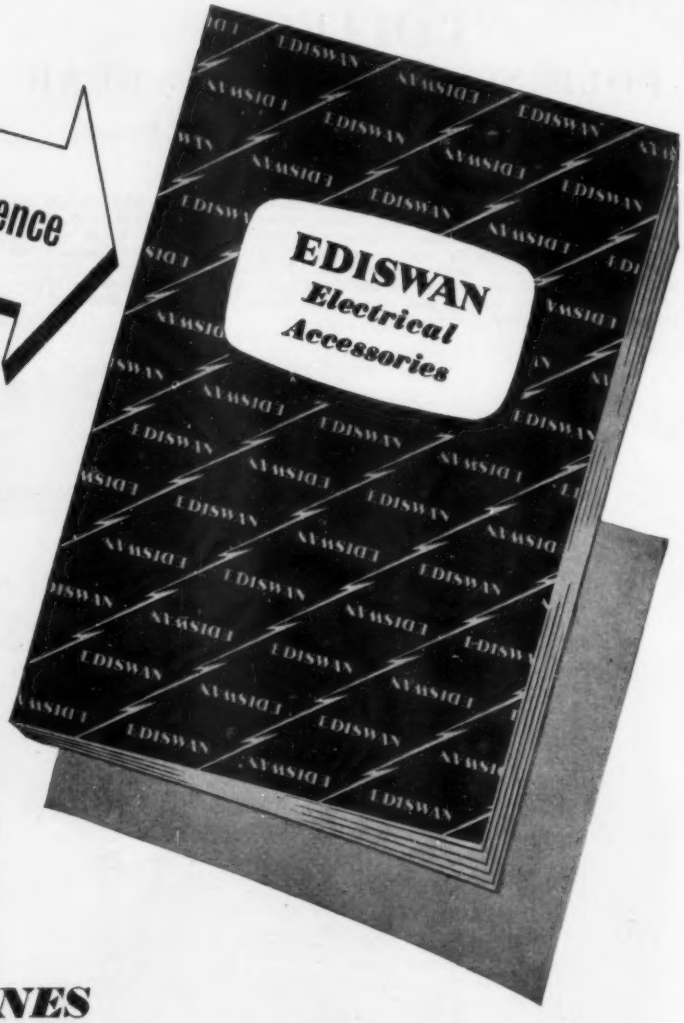


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# Better Factory Design

AT the Production Conference held at Olympia and sponsored by the Institution of Production Engineers, a paper "Investing in Better Factory Design, Construction and Layout" was read by Mr. D. T. Myers, A.R.I.B.A. Unfortunately it seems that only a few architects and members of the building industry have attended this exhibition, presumably because the building industry does not seem greatly concerned with production problems.

The paper was a very interesting contribution to the Conference and contained much food for thought, especially in regard to future trends in the requirements for factory buildings. As the paper was presumably addressed mainly to management and production engineers it did not contain much detailed information of the type which tends to attract architects, nonetheless it contained ideas of which architects need to be fully aware.

While not knowing Mr. Myers' work his paper leaves an impression that he has been fairly closely associated with the motor car and similar engineering industries and has studied, in particular, the American automobile factory practice but that he may not appreciate so fully some of the problems of buildings for the many very different types of industrial production, such as those needed for the chemical, paper and textile fields. However, Mr. Myers' analysis of the problem of factory design and construction is applicable generally even if in detail one cannot always agree with him.

The following are among the points which Mr. Myers made—the shape of the space and certain of its characteristics depend upon the individual industry and its requirements. The major issue is that industry never seems to have enough space, consequently designing for industry means creating flexible space, specifically for that industry, in such a way that it can expand or contract properly and re-adjust itself easily and economically to meet changing demands. Flexibility incorporated in the design means visualizing changes in production which will require either new machines or re-location of old machines and the future expansion of the building to accommodate increased production. Factory buildings can no longer be thought of as "process" on the one hand and "building" on the other. The building as such should be the result of conditions imposed by the manufacturing process and a crystallization of the thoughts of the many specialists involved in its design. The result of this is a fusion of building and process.

He points out that if the building does not work then the process cannot operate at maximum efficiency and the result is a faltering production tool. Thus the building has the key part to play in production, thus consideration of siting and transport, initial building costs and maintenance are all reflected in the final price of a product. He suggests that the aim should be to produce industrial buildings which will work as hard as the machines they house, thus enabling the production of finished goods economically. To continue to compete in world markets and enjoy any trading advantages leading to an increased standard of living it is essential that the buildings of industry make a direct contribution. It is necessary to strip down and examine the costs of production and architects have their part to play in ensuring the economy and efficiency of the buildings which house the machines. Factory buildings become units of space designed around the differing requirements of the individual industries, their production areas, storage areas and office areas. An applied analysis of space to each of the related stages in the manufacturing process increases the awareness of the true nature of space and its elements and thus provides for the industry to function at its full potential.

Mr. Myers suggests that the better factory must have a more intelligent and realistic use of space and will have the following:

1. A production space engineered for efficient running with preplanned maintenance, flexibility of production and expansion designed into the building.
2. Storage space designed closely around the movement of material yet permitting flexibility.
3. An office space designed around the exchange of information rather than pieces of paper.
4. A welfare space which is the whole factory and not merely the recreation areas and amenities.
5. An enclosure to the space which will work to maintain whatever climatic conditions are necessary for a process and so cut down heating and cooling bills, and which will possibly make greater use of standardisation and prefabrication.
6. A site chosen for both present and future needs.
7. Generally, economical buildings which will go up on schedule, and, once up, will require little maintenance.

Mr. Myers stresses very heavily the need to design for this flexibility to provide the maximum facility for making changes as technical advances take place. He even suggested that one should anticipate the day when the building is to be taken over for some other industrial use but this seems far fetched and seems in contradiction to the suggestion that every industry tends to have requirements particular to itself.

He had very much to say on the effects that automation may have on factory building requirements and suggested that this might reduce the accommodation needs, in some instances by as much as 50 per cent., a view which the Chairman of the meeting, Sir Herbert Manzoni, questioned by citing an example of a well-known strip-mill where automation appeared to have increased the area needed.

On the details of achieving flexibility he suggested that columns sterilize 9 to 16 sq ft of working floor space and justify adopting very large span systems. However, the cost involved in producing these large spans is undoubtedly great and could only be justified if future trends indicated that they are likely to be increasingly necessary in the future. He suggested also the strengthening of the bottom cord of trusses to allow for future overhead conveyance and handling equipment as the extra cost is negligible; it is extremely difficult to decide what loads need to be designed for in the future and just where they will be needed as these have quite a considerable influence on the truss designs.

In relation to floors Mr. Myers seemed to feel that it was necessary to design these so that machines can at some future date be placed anywhere and advocated a somewhat elaborate system of construction to meet his proposal. The wisdom of this proposal seems questionable as the future loading both in quantity and position must of necessity remain an unknown quantity while the rigidity of floors to reduce vibration and the resulting noise is vitally important in so many factories. He illustrated his paper with a photograph of a system adopted in an American factory which appears to be so extraordinarily costly, in order that it should be flexible, that one is left wondering whether it is worthwhile or whether it would not pay better to build only what is needed at the moment and rebuilding only what must be changed at a later date.

Very wisely Mr. Myers drew attention to the growing importance of adequate thermal and sound insula-

## Better Factory Design

tion and that these were factors that needed to be considered from the early stages of the design and not to be an added afterthought. He put forward a suggestion that since in so many industrial buildings the plant obstructs much of the light received from windows so that artificial light is almost always necessary, the complete omission of windows and roof lights might be justified and thus aid thermal and sound insulation problems. He suggested that a powerful argument against resorting to artificial lighting and ventilation and the consequent scrapping of windows is that of phsychology, but he pointed out that it was interesting to know that in Sweden, where the greater part of her defence programme is underground, a survey indicated that there had been no adverse effect on the health and comfort of the workers. He suggested that measures of control now available could often provide much more satisfactory and constant working conditions by artificial rather than by natural means.

He suggested that early attention should be given to the possibilities of isolating noisy processes from the rest of a factory and drew special attention to the noise created by trolleys, fork-lift trucks and reverberations from presses which require good floor insulation by separating and floating the various elements to break the diaphragmatic action induced by impact. A suggestion put forward for consideration was that there might be a system of sound baffles, which could fold back into walls when not in use, as an aid to the breaking up of sound in long buildings. The effectiveness of such an idea seems questionable since effective baffles demand mass and surely machines, owing to their cost, need to be in such constant use that baffles have either to be permanent or not there at all.

Throughout the paper Mr. Myers seemed to have completely overlooked the importance of limiting space in order to limit fire risks. The impact of certain relatively recent disastrous factory fires does not appear to have rung a bell. Mr. Myers discussed the importance of preplanned maintenance as he seemed to expect that full automation might necessitate 24-hour operation of machines in order to justify their very heavy capital cost.

On the subject of storage he had much of value to say but I would disagree with his objections to the use of U or L shaped buildings as these often have great advantages. Storage is certainly changing both in its form and its location and it is now more and more becoming the custom to provide a series of stores so placed in relation to the factory equipment that materials and components are fed in to the process from stores close to where they are needed and not from large bulk stores serving the whole factory.

Fork-lift trucks and conveyors have also influenced very considerably earlier theories on storage. Several speakers in the subsequent discussion supported the idea of placing storage over the using machines on an upper floor and several of the speakers stressed that the availability of land was such that multi-storey buildings should be used whenever the process permitted as the nation could no longer afford the land for large straggling single-storey factories.

Mr. Myers said he wanted to make specific reference to floors as these could not be skimped or cheaply finished due to the heavy treatment they receive from fork-lift trucks and the like, but unfortunately he gave no solution to this problem which is always present in all industrial buildings.

Mr. Myers drew attention to the advantages of prefabrication in factories and gave an impression that this might solve many problems, especially if there could be an agreed "standard bay" dimension. This idea of a standard bay did not seem to line up with his suggestion that the needs of every industry are individual and if he had studied closely the very varying demands produced by the enormous range of requirements of the multitude of manufacturing industries it seems unlikely that any standard bay dimension would suit more than a few. In the comparatively narrow field of their requirements he suggested that school buildings had already demonstrated the value of prefabrication but he appears to have omitted to appreciate that the relatively small module of 40in, which would have little or no relation to the large span dimensions he wished to standardize, appears to be the largest workable dimension having general application to schools.

On the subject of standardization Mr. Myers suggested that there were two types, standards of performance and standards of materials and equipment. He omitted any reference to standard components in agreed sizes, which might well provide a means of overcoming the need for his standard bay size. He pointed out that we have not yet agreed in this country a method of modular co-ordination but drew a curious conclusion from an example of American modular co-ordination when he called attention to the fact that it had permitted one firm to reduce its production line of windows from 2,000 to 300. He might like to know that both the wood and metal window industries in this country achieved far more drastic reductions than this by agreeing standardization without an agreed module and no doubt these industries hope to achieve even narrower production ranges when a British module is agreed.

Having made some observations on the astronomical maintenance expenditures and heat losses in factories in this country he pointed out that there are nevertheless some of the finest factories in the world in this country, although they are not the common run. Certain of the speakers in the discussion, with whom I would agree, questioned whether Mr. Myers appreciated that in U.S.A., which he seemed to think have wonderful factories, there are just as many factories which are as bad as ours and many which are worse as the Factory Department of the Ministry of Labour ensure that conditions are at least tolerable in our factories while in U.S.A. there are many where the conditions are not even up to our minimum level and where small attention is given to the important aspect of human relations. One speaker suggested that Mr. Myers would find factories even more efficient than those in U.S.A. in almost every European country and which would justify his examination.

The most excellent, and one of the main themes of the paper, was the need for research into the requirements of factory buildings and the advantages to be gained by having full data resulting from proper survey. He made reference to the programme of research of this nature which B.R.S. is about to commence under the auspices of the Midland Regional Board of Industry. The need for research into factory buildings has been apparent for many years and it is very gatifying to know that it has started even if it is only, as yet, in a small way. It seems doubtful, however, that the parallel example of the gain from research into schools quoted in the paper is in fact quite as good as the picture that was painted. At least some of the advantages referred to, such as cost reductions and greater percentage of total floor area used for teaching, have not been entirely the result of getting what is right and necessary through research, but in part the result of the lowering of design standards to meet national economic necessity. As building costs, especially as capital costs, are a relatively small percentage of the cost of the products made in factories the buildings can certainly afford to be of the correct design standards in order to make a full contribution to industrial productivity which Mr. Myers quite rightly advocated.

*DUTCH UNCLE*

*This recessed lighting scheme of the canteen in the American Embassy was designed by Philips*

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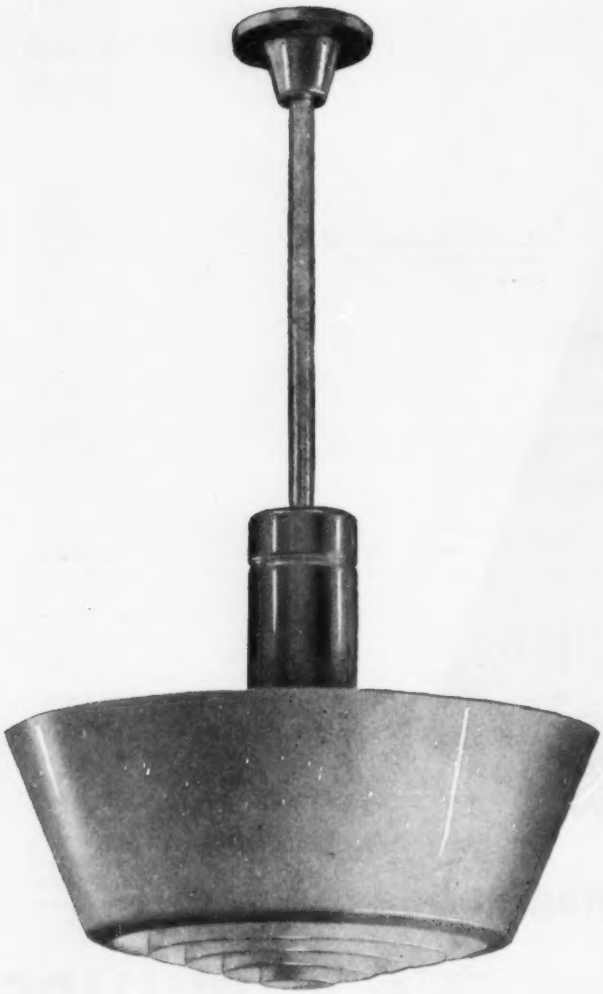

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publication V.80.

SPECIFICATION. The 12" diameter louvred diffuser is moulded in a white translucent non-static high temperature plastic, and its position is adjustable for use with a 200w., 150w. or 100w. lamp.
Direct downward lighting is obtained through the louvred aperture, the top is open giving shadowless ceiling illumination. Diffused general lighting with low brightness is obtained through the translucent sides.
Metalwork is in anodised aluminium, finished satin silver.

| | | |
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| | V.80. Basic Type. for attachments to existing suspensions | **22/8** + 5/2 P.T. |
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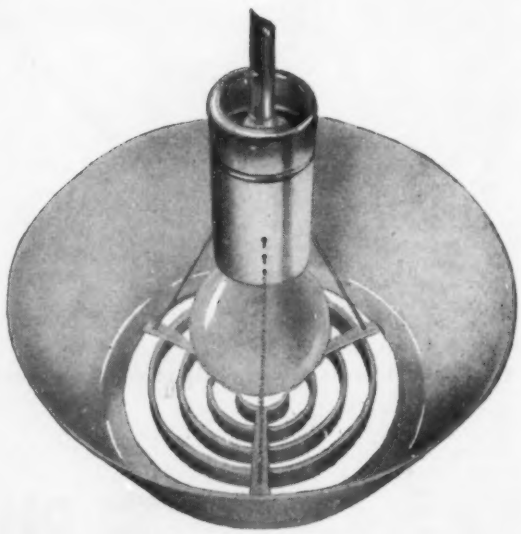
| | V.84. Flex Suspension Type | **28/0** + 6/4 P.T. |
| | V.86. Tubular Suspension Type | **30/8** + 6/11 P.T. |



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# Industrial Notes

● The modern laboratories and processing plant under construction for the proposed atomic reactor at Dounreay Thurso, Caithness, Scotland, will entail the use of 29,231 sq. yds. of insulated steel deck roofing supplied by The Ruberoid Co. Ltd. Among those buildings already completed in the scheme, which is being carried out by Whatlings, Ltd., of Thurso, for the U.K. Atomic Energy Authority, is a main group comprising administrative and surgical block with workshops, garage and fire station, as well as a chemical group consisting of laboratory and administrative rooms. The 135 ft diameter steel sphere enclosing the reactor is already half-completed and a considerable amount of internal structure has been installed. By next year, a large labour force of about 2,000 people is expected to be working on the site, the station being scheduled to come into operation in 1959.

● More than 60,600 sq yds of insulated asbestos cement cavity deck roofing are being supplied by The Ruberoid Co. Ltd., for a new press shop, assembly shop and panel store under construction for Vauxhall Motors Ltd., at their factory in Luton, Beds. This scheme is part of a £36 million expansion programme, and will ultimately provide 1¼ million sq ft of additional buildings at Luton. General construction is being carried out by Sir Robert McAlpine and Sons Ltd. The Architects are Howard Souster and Fairbairn.

● The new showrooms of A. D. Foulkes Ltd., at Warwick Row, Coventry, were designed by Rolf Hellberg and Maurice Harris. They provide up-to-date facilities for architects and builders seeking information on kitchen and household equipment. In addition there is a Demonstration Theatre.

● The Marley Tile Company Limited announce that they will shortly open a roof tile manufacturing plant at Salisbury, Southern Rhodesia. Capacity production will be ensured by all the latest methods employed at the other eleven Marley factories in which a total of 600 million roof tiles are made annually. The Salisbury plant will be the second the Company has built in South Africa. A floor tile factory began operating at Nigel, in the Transvaal, two years ago.

● A complete range of portable electric tools for use in the manufacture, maintenance, and repair of farm machinery and motor vehicles will be exhibited at the Royal Show at Newcastle, July 3 to 6, by Black & Decker Ltd., occupying stand No. 74, Block and Avenue No. D3.

● At the third Annual General Meeting of Fidor (Fibre Building Board Development Organisation, Ltd.), held at Amsterdam on May 31, Mr. E. R. T. Foad was elected chairman of the Governing Council, and Mr. E. P. Lawrence, vice-chairman. Mr. Foad is managing director of Wm. Brandts (Wallply) Ltd., and Mr. Lawrence, managing director of Scharin Products Ltd.

● Mr. Robert Duncan Lawrie, foundry manager of Distington Engineering Company Limited (United Steel Companies Limited), Workington, died at his home on Friday 25th May 1956, at the age of 60 after a long illness.

● John H. Goodman, formerly with Expandite Ltd., has joined Evomastics Ltd., of Stafford, and has been appointed Area Manager of London and Home Counties, where he will be engaged on sales development of the new mastic products of the company to be marketed under the name of Evomastic.

● Over four thousand dealers throughout Britain have been invited to take part in a window display competition which started on Monday, June 11th. Competitors will be the authorised appliance and television dealers of the English Electric Company who are offering twenty-five prizes totalling £300 for the most original and effective designs. Competing displays must include one or more items from the English Electric range of appliances or television receivers, but the dealer may use any other display material he chooses. The country will be divided into eight areas for the purpose of preliminary judging which will be done by the Company's Domestic Appliance Area Managers during the three weeks from June 11th to June 30th. The names of the winners of the £50 national prize and of the area awards are to be announced by mid-July.

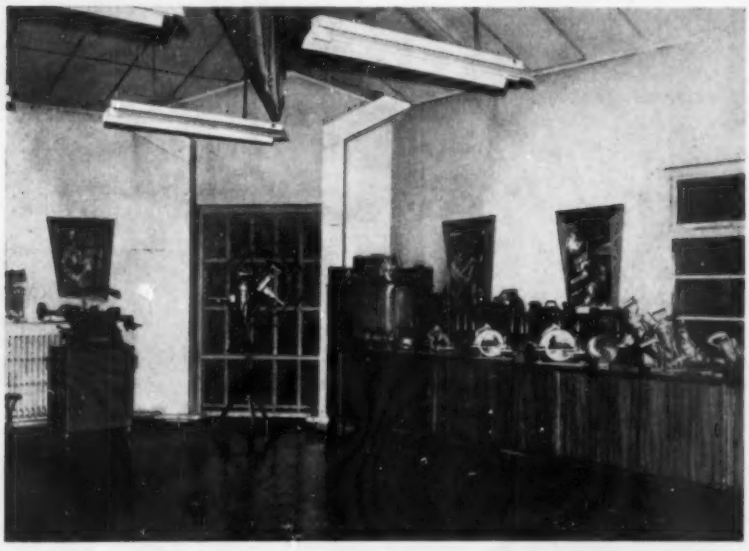
● The Portable Electric Tool Manufacturers' Association is acting as host to the Federation of European Electric Tool Manufacturers' Associations at the Annual International Conference which opens at St. Ermin's Hotel, Caxton Street, Westminster, S.W.1, on Wednesday, 27th June. The conference inauguration will be under the chairmanship of Mr. C. U. Peat, who is also chairman of P.E.T.M.A. General proceedings will be chaired by Mr. Herzog, of France, the President of the Federation of European Electric Tool Manufacturers' Association.

● Henry Wiggin and Company Ltd. announce that they have purchased the specialised high nickel alloy fabricating plant at Hereford, which they designed and erected for the Ministry of Supply and have been operating since 1954. The Company is a wholly-owned subsidiary of the Mond Nickel Company Limited, an affiliate of the International Nickel Company of Canada, Limited.

● Hunting Geophysics Limited, announce the appointment of Dr. Wojieck Domzalski Ph.D., B.Sc., A.R.S.M., D.I.C., as their Chief Geophysicist.

● Editorial Services Ltd. have been appointed public-relations advisers to the Domestic Refrigeration Development Committee. This committee, which is acting through the British Refrigeration Association, comprises the leading firms in the domestic refrigeration industry and its purpose is to increase the use of refrigeration by the general public.

● The Turriff Construction Corporation Ltd. has appointed Mr. John Llewellyn as Group Development Executive to assist in developing the activities of the Corporation and its subsidiary companies.



*Part of the Demonstration Theatre which is a feature of the new Black & Decker Branch Office in Manchester*

# NEW PRODUCTS

1

The new Permoglaze eggshell finish by Permoglaze Ltd., dries quickly to a tile-hard finish that is resistant to steam and condensation. Makers claim that there is no drip or spatter from the brush and illustration, Fig. 1, shows the thixotropic properties of Permoglaze.

★

This lighting fitting for commercial applications, Fig. 2, is an enclosed translucent type, No. F.9075, by Holophane Ltd. The prismatic glass unit consists of two moulded glasses, the upper reflecting, the lower diffusing.

★

Allweather Paints Ltd., announce a new advance in decorative finishes, their Pitan Thixotropic paint. They claim that during normal use, Pitan Thixotropic paint will not spill if the tin is knocked over, nor will it drip off the brush. Pitan Thixotropic paint is available in 16 colours, in addition to Black and White, and can be supplied in gloss or flat.

The J10, Fig. 3, is the latest addition to the Hurseal range of radiators. It is an hermetically sealed, oil filled, 2 column safety radiator of 1 kW loading. It is 1ft 5in high x 3ft 2in long x 3¼in wide (8in spread of feet).

★

The Eskimo Weather Excluder, Fig. 4, is available in two sizes, 32 and 36in long, by Middleton Bros. It has a rubber insert to exclude draught and weep holes from a drainage channel behind the curved front. Height, ⅞in.

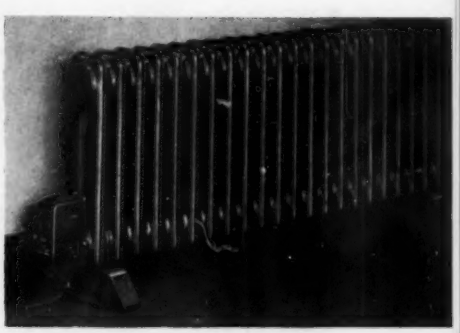
★

Blackwood Hodge, U.K. distributors of Huber-Warco products announce a new addition, Fig. 5, to the range of rollers. The newcomer is a 3-5 ton variable weight tandem roller with torque convertor and 41 h.p. water cooled engine. Other features include a spur-gear final drive mounted in the frame, large capacity sprinkler tank and over-sized, double-plate clutches for forward and reverse shifting.

★

Ventrot by British Bitumen Emulsions Ltd., is a blend of residual bitumens applied ¼in thick to a solid sub-floor to provide a continuous layer impervious to rising dampness both in liquid and vapour form, and over which an even screed of at least 2in in thickness is laid in preparation for the floor finish. By its use timber flooring laid in direct contact with the concrete will it is claimed, be protected indefinitely against the ingress of moisture which permits growth of fungi leading to the condition known as dry rot and it is also suitable for use where linoleum, rubber sheeting, P.V.C. sheeting, magnesite composition, thermo plastic tiles, etc. are to be laid on concrete where there is a possibility of the presence of rising damp.

2



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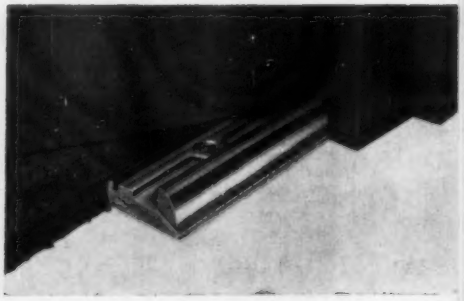


4

5

St. Joseph's R.C. One Form Entry and Junior School, Southdene, Kirkby, Liverpool
*Architects*: L. A. G. Prichard & Son, A.R.I.B.A.
*Contractors*: Frederick Clark & Son, Liverpool

Show

floorthought

with

MARLEY tiles

## Mixers continued

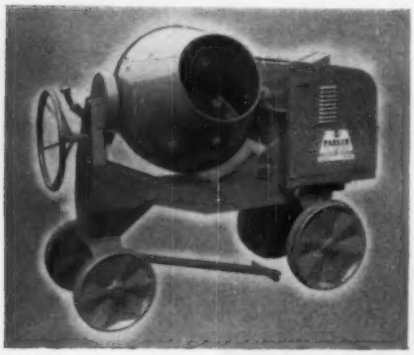
| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| BLAW KNOX LTD. | Rex Cleanline 7S. | Revolving drum, hopper elevated loader | 7 wet, 10 dry | Loader up : 8′ 0″ x 8′ 8½″ x 8′ 6″ Loader down: 10′ 7″ x 8′ 8½″ x 8′ 6″ Weight: 32 cwt. | Ruston or Petter diesel, Petter petrol or 5 h.p. electric | Three-way lever operated water valve gives positive cut off. Folding hydraulic weigher and mechanically operated skip loader may also be used. May be mounted crosswise on axles or supplied as high-mounted fully mobile unit having discharge height 5′ 6″ above ground. Extended power loader available. 6 buckets and 6 blades. 9 gallon water tank. 4 wheels. |
| | 10S | as above | 10 wet, 14 dry | Loader up: 8′ 6½″ x 8′ 11″ x 8′ 10″ Loader down: 11′ 10½″ x 8′ 11″ x 8′ 10″ Weight: 40 cwts. | As above but 7½ h.p. electric | As above but with 14 gall. tank. |
| | 12S | as above | 12 wet, 17 dry | Loader up: 8′ 11½″ x 8′ 11″ x 8′ 10″ Loader down: 12′ 7½″ x 8′ 11″ x 8′ 10″ Weight: 42 cwts. | as above | as above. |
| | 14S | as above | 14 wet, 21 dry | Loader up: 9′ 6½″ x 9′ 1″ x 9′ 9″ Loader down: 13′ 8″ x 9′ 1″ x 9′ 9″ Weight: 60 cwts. | Ruston 12 h.p. radiator-cooled diesel or 10 h.p. electric | As above but with 8 buckets, 4 blades and 20 gall. water tank. |
| | 28S | Fixed loaded, rotary drum | 28 wet, 40 dry | 7′ 6″ x 11′ 1½″ x 9′ 3¾″ (15′ 1¾″ with water tank) Weight: 98¾ cwt. | 25 h.p. electric | Loading height: 8′ 8¾″ Charge and discharge openings 2′ 2½″. Has 12 buckets, 6 blades and 42 gall. water tank. |
| GOODWIN BARSBY & CO. LTD. | (1) Medak (2) Menor | Tilting drum (1) side (2) end discharge | 2 wet, 3 dry | Weight: 4 cwt. | 1 h.p. Villiers air-cooled petrol or electric | Mounted on 2 pneumatic tyred wheels. |
| | Mezah | Tilting drum, side discharge | 3½ wet, 5 dry | Weight: 10½ cwt. | 1½-2 h.p. Petter or Lister air-cooled diesel, Villiers or Petter air-cooled petrol, Lister hopper cooled petrol or electric | 2 steel or pneumatic tyred wheels Discharges on both sides. All working parts totally enclosed. |
| | Mehye | as above | as above | Weight: 10½ cwt. | as above | As above but with 4 wheels. |
| | (1) Melbie (2) Melco | Tilting drum, end discharge | as above | Weight: 10½ cwt. | 1½-2 h.p. Villiers air-cooled petrol or electric | (1) without brakes (2) with brakes for towing. 2 pneumatic tyred wheels. |
| | Meigs | Tilting drum, side discharge | 5 wet, 7 dry | Weight: 16½ cwt. | as Mehye | As for Mehye. |
| | Major | Tilting drum with power operated loaded | (1) 5 wet, 7 dry (2) 7 wet, 10 dry (3) 10 wet, 14 dry | Weights in cwt.: (1) 32-38 (2) 38½-42½ (3) 61-62 | (1) 3-6 h.p. petrol 3-5 h.p. diesel (2) 5-6 h.p. petrol or diesel (3) 6-7 h.p. petrol or 6-8 h.p. diesel | Codewords: (1) Mulpf, Merse (2) Mulqu, Merta (3) Mupat, Merut. Has 4 steel, pneumatic tyred or solid rubber tyred wheels. |
| | Master | Rotary drum, hopper elevated loader | (1) 5 wet, 7 dry (2) 7 wet, 10 dry (3) 10 wet, 14 dry (4) 14 wet, 21 dry | Weights in cwt.: (1) 35-40 (2) 40-44 (3) 48-52 (4) 57-60 | (1) 4-6 h.p. (2) 6-8 h.p. (3) 8-10 h.p. (4) 10-12 h.p. all petrol or diesel Petter or Lister, electric or air motor | Mechanically operated loading skip with shaker gear, lever control discharge chute and automatic water tank. 4 steel pneumatic or solid rubber tyred wheels. All sizes, available as "Tall-master" being raised on a steel frame and having delivery height of 5′ 6″. |
| | Master Trailer | Rotary drum with power operated loading skip | (1) 5 wet, 7 dry (2) 7 wet, 10 dry | Weights in cwt.: (1) 30-34 (2) 35-39 | (1) 4-5 h.p. petrol 5-6 h.p. diesel (2) 6-8 h.p. petrol or diesel, Petter or Lister | Specially designed for towing by fast moving vehicle. |

*3½T by Millars' Machinery Co. Ltd.*

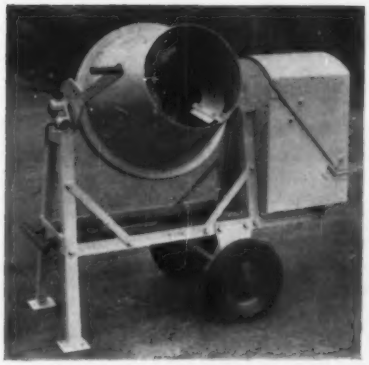
*5T by Millars' Machinery Co. Ltd.*

*4′ 6″ overdrive roller pan by Millars' Machinery Co. Ltd.*

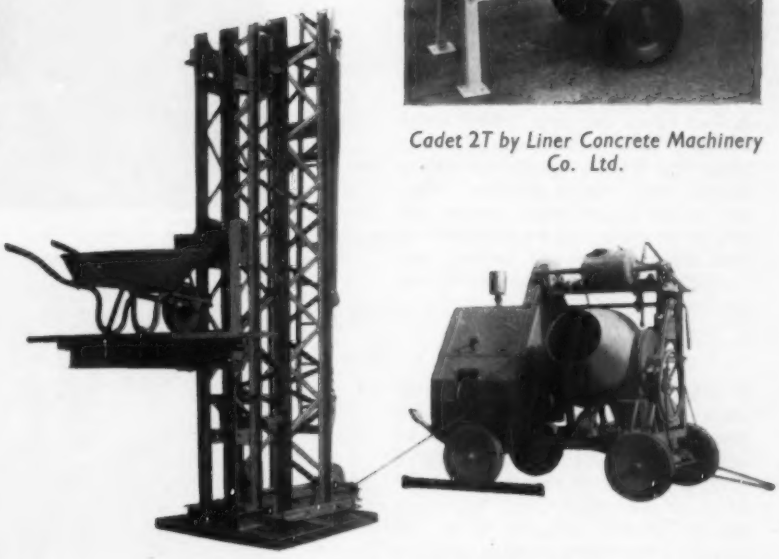
# Mixers



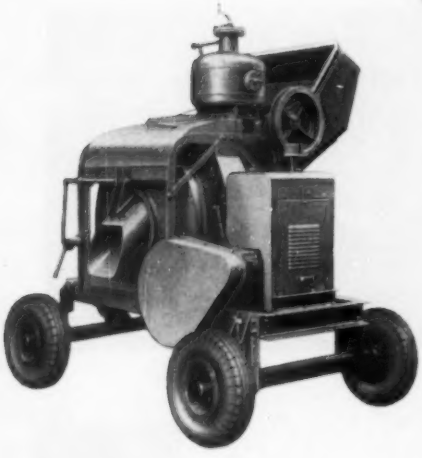
Little Giant 3½T Compact by Fred. Parker Ltd.



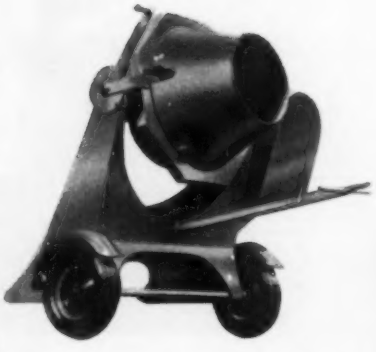
Cadet 2T by Liner Concrete Machinery Co. Ltd.



7/5 BH combined mixer and winch by Millars Machinery Co. Ltd.



"Master" non-tilt mixer by Goodwin Barsby & Co. Ltd.



804 Barber-Greene Mixall by Jack Olding & Co. Ltd.

7HNT Hydraulic non-tilt mixer by Liner Concrete Machinery Co. Ltd.

Above. 3/2 Menor by Goodwin Barsby & Co. Ltd.

# Batching

**1.** *The Portasilo by Portasilo Ltd. Left with pullwey extended and right in horizontal position on 2-man handling device. Models range from 10 to 30 tons capacity. Loaded pnuematically from bulk cement tanker. Integral mechanical cement man provides automatic batch weighing.*

1

**2.** *Two 12 cu. yd. twin hopper weigh batching plants, by Road Machines (Drayton) Ltd., equipped with double bucket swing/weigh batcher. When two mixers are employed, one on each side of the plant, the weigh batcher is centrally mounted and loading best carried out by mechanical shovel over the bin ends.*

2

**3.** *28BP Portable batching and mixing plant by Stothert & Pitt Ltd. With diesel or electric drive and may be used with one or two super 28NT Victoria mixers, cement elevator and 3, 4 or 5 compartment aggregate storage hoppers, capacity 40 to 100 cu yds. Plant constructed in units for ease of erection.*

**4.** *Batch hopper of Cement Silo by Acrow (Engineers) Ltd. is here shewn discharging into mixer skip. The Silo is in three sizes having capacities of 15, 25 and 35 tons. Travelling weigh hopper is of 500 lb capacity.*

3

4

**5.** *Universal Weighbatcher by Blaw Knox Ltd. Capacity of standard bulk cement receiving hopper is 7 tons (larger sizes if required). Multi-bucket aggregate loader has maximum output of 60 cu yds/hr. Weighing method is hydraulic and capacity of weigh hopper 26 cu ft.*

5

*A List of Manufacturers:—*

Acrow (Engineers) Ltd.
Blaw Knox Ltd.
Millars' Machinery Co. Ltd.
Portasilo Ltd.
Ransomes & Rapier Ltd.
Road Machines (Drayton) Ltd.
Stothert & Pitt Ltd.

## Mixers *Continued*

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| LINER CONCRETE MACHINERY CO. LTD. | Cadet | Tilting drum | 2 wet, 3 dry plus 10% | Width: 2′ 3″ Weight: 4¼ cwt. | 1 h.p. air-cooled petrol | Finger-tip lever drum control. Also available as a towing model. Two wheels. |
| | Junior | as above | (1) 3½ wet, 5 dry (2) 5 wet, 7 dry | Weight: (1) 11½ cwt. or 12½ (2) 14½ cwt. | 1½ h.p. water or air cooled petrol, diesel TVO or electric | Incorporates swing-up engine house and fully invertible drum. (1) Two or four wheels (2) Four steel or pneumatic tyred wheels. |
| | Trailex Junior | as above | 3½ wet, 5 dry | Weight: 13½ cwt. | 1½ h.p. petrol, diesel or paraffin | Mounted on 2 pneumatic wheels with towbar overrun brakes and designed for high speed towing. |
| | Rolpanit | Roller pan | (1) 5, (2) 6½/8 (3) 12, (4) 14 (5) 16 | Weights from 22 to 93 cwt. | 4, 5, 8, 10 and 12½ h.p. petrol, diesel or electric | Pan sizes: 3′ 6″, 4′ 6″, 5′ 6″, 6′ 3″, 7′ 3″. First 3 sizes available as portable. All sizes as fixed motor driven without loader and all but 3′ 6″ size as fixed motor driven with power batch loader. |
| | Cloverleaf | Elevated hopper loader | (1) 5 wet, 7 dry (2) 7 wet, 10 dry | Weights 29 and 36 cwt. | (1) 3½ h.p. petrol (2) 5 h.p. petrol paraffin or diesel | Mounted on 4 steel or pneumatic tyred wheels. Water tank fitted. Except when in gear, the brake is always automatically on. |
| | Hydraulic | Non-tilt mixer Hydraulic hopper elevated | 7 wet, 10 dry | 10′ 6″ (hopper down) x 8′ 1″ x 9′ 6″ (hopper up) Weight: 40 cwt. | 6 h.p. diesel | Has hydraulic-operated hopper. Has 60 deg. discharge angle. Discharge height 2′ 4″. Has 4 steel rubber or pneumatic tyred wheels. |
| MILLARS MACHINERY CO. LTD | 3½ T | Tilting drum | 3½ | 4′ 1″ working (3′ 5½″ over wheels) x 6′ 7½″ (9′ 6½″ draw bar extended) x 5′ 4″ (4′ 9½″ for transport) Weight: 10½ cwt. | 1½ h.p. diesel or petrol | With either 2 or 4 steel or pneumatic tyred wheels. Feeding height 3′ 6″. Discharge height 2′ 0″. |
| | 5T | Tilting drum | 5 | 4′ 4″ working (3′ 10½″ over wheels) x 7′ 7½″ (11′ 1″ drawbar extended) x 5′ 9″ (5′ 1½″ for transport) Weight: 15½ cwt. | 1½ h.p. diesel or petrol | 4 steel or pneumatic tyred wheels. Feeding height 3′ 11″ Loading height 2′ 0″. |
| | Anson 7NT | Non-tilting drum | 7 | 7′ 0″ (10′ 4″ loader lowered) x 11′ 9″ x 8′ 9″ (loader raised), 8′ 0″ (lowered) Weight: 38/41 cwt | Ruston diesel or Bamford petrol | 4 steel or pneumatic tyred wheels. Discharge height 2′ 4″. Incorporates automatic shaker gear. 8 gall. water tank. |
| | 7/5 BL. | Tilting drum elevated loader | 5 | 6′ 4″ (8′ 7″ loader lowered) x 8′ 0″ (11′ 9″ over drawbar) x 8′ 4″ (Bucket at top) Weight: 31 cwt | 3½ h.p. Bamford or Lister hopper cooled petrol 3½ h.p. Bamford or Petter radiator cooled diesel | As above but discharge height 2′ 0″ and 7 gall. tank. |
| | 7/5 BH. | as above but Combined with winch | 5 | As above but length 8′ 6″ and 12′ 3″ over drawbar. Weight 37½ cwt | Ruston radiator cooled diesel | As above. Incorporates small barrel winch integral with the mixer and driven from same power unit. Winch capacity: 5 cwt at 150 f.p.m. on single part or 75 f.p.m. on two part rope. |
| | 10 7 B.L. | Tilting drum elevated loader | 7 | 6′ 9″ bucket up (9′ 3″ down) x 9′ 1″ (12′ 8″ with drawbar) x 8′ 7″ bucket up (7′ 11″ down) Weight: 35 cwt | 5 h.p. petrol or diesel (radiator or hopper or air cooled) | 4 steel or pneumatic tyred wheels. Discharge height 2′ 0″. Incorporates automatic shaker gear. 8 gall. water tank. |
| | 4′ 6″ Overdriven | Roller pan mixer | 5 (Sand/lime) mortar) 4 (black mortar) | 4′ 10″ x 8′ 9″ (11′ 4″ with drawbar). x 7′ 0″ Weight: 42 cwt | 5 h.p. petrol or diesel | Mounted on 4 steel wheels. Adjustable pan rollers. Discharge height 1′ 2″. 8 gall. water tank. |
| | Vanguard 10 NT. | Non-tilting drum elevated loader | 10 | 8′ 2″ (12′ 0″ loader lowered) x 13′ 4″ over drawbar x 10′ 3″ (9′ 1″ loader lowered). Weight: 56 cwt | 7½ h.p. Ruston radiator cooled diesel | 4 steel or pneumatic tyred wheels Discharge height 2′ 7″ Incorporates automatic shaker gear. 12 gall. water tank. |
| | 28 NT. | Stationary Non-tilting drum | 28 | 9′ 0″ x 10′ 6″ x 11′ 6″ Weight: 90 cwt | Diesel or electric | Batch hopper has 42 cu ft capacity 30 gallon water tank. Inlet valve for connecting to main or other water supply. |
| JACK OLDING & CO. LTD. | Barber-Greene 804 Mixall | Rotary drum elevated skip loader | 3 | 7′ 11″ x 13′ 1½″ x 8′ 3½″ Weight: 60½ cwt | Petrol, diesel or electric | Suitable for low slump concrete. Incorporates twin shaft pugmill. Two pneumatic tyred wheels suitable for towing. Shovelling height 1′ 2″. 50 deg. dumping angle. |
| FREDERICK PARKER LTD. | Little Giant 3½T Compact | Tilting drum | 5 dry; 3½ wet | 2′ 8″ (3′ 2″ tilted) x 4′ 2″ x 5′ 4″ Weight 6½/7 cwt | 1½ h.p. petrol | 2 metal or pneumatic tyred wheels (fast trailing model). |
| | Little Giant 3½T | as above | as above | (1) 2′ 9″ (3′ 2″ tilted) x 6′ 5″ x 5′ 4″ (2) 2′ 11″ (3′ 2″ tilted) x 6′ 5″ x 5′ 4″ (3) 6′ 5″ x 5′ 9″ x 5′ 4″ Weights: 9½/11 cwt | 1½ h.p. petrol diesel, T.V.O. or electric | (1) 4 wheels, (2) 2 wheels, (3) Fast trailing. Geared tilting and handwheel control. |
| | Speedia 5D | Tilting drum, pivot type loading hopper | 5 | 4′ 7½″ (7′ 4½″ hopper down) x 7′ 4½″ x 7′ 9½″ Weight: 27 cwt | 3½ h.p. petrol or diesel or electric | Discharge height 2′ 3″. Water tank 10 galls. 4 steel or pneumatic tyred wheels for towing. |

## Mixers Continued

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| FREDERICK PARKER LTD. | 5DH | as for 5D | 5 | Measurements as for 5D Weight: 42 cwt | 6 h.p. petrol or diesel or electric | As for 5D but with barrow hoist lifting 8 cwt at 80 to 100 f.p.m. |
| | 7D | as above | 7 | 5′ 2″ (8′ 4″ hopper down) x 8′ 1″ x 8′ 10″ Weight: 37½ cwt | 5 h.p. petrol or diesel or electric | Discharge height 2′ 5″. Water tank 11 galls. 4 steel or pneumatic tyred wheels for towing. |
| | 7DH | as above | 7 | Measurements as above. Weight: 53 cwt | 7 h.p. petrol or diesel or electric | As above but with barrow lifting hoist 10 cwt at 80 to 100 f.p.m. |
| | 10D | as above | 10 | 5′ 6½″ (9′ 2″ hopper down) x 8′ 2″ x 9′ 9″ Weight: 51 cwt | as above | Discharge height 2′ 9″. Water tank 19 galls. 4 steel or pneumatic tyred wheels for towing. |
| | Non-Tilt 7S | Rotary drum, elevated loader | 7 | 7′ 2″ (10′ 2″ hopper down) x 7′ 11″ x 8′ 3″ (8′ 7″ hopper raised) Weight: 32 cwt | 6/8 h.p. petrol or 8/10 h.p. diesel | Discharge height 2′ 6½″ Water tank 9½ galls. 4 steel or pneumatic tyred wheels. Also supply 7S as two wheeled mobile model. |
| | 7SH | as above | 7 | Measurements as above. Weight: 44 cwt | 8/10 h.p. petrol or diesel | Discharge height 2′ 6½″. Water tank 9½ galls. 4 steel or pneumatic tyred wheels. Incorporates barrow hoist to lift 8 cwt. 80/100 f.p.m. |
| | 10S | as above | 10 | 7′ 7″ (10′ 9″ hopper down) x 8′ 4″ x 8′ 10″ (9′ 0″ hopper raised) Weight: 38 cwt | as above | Discharge height 2′ 6½″. Water tank 13 galls. 4 steel or pneumatic tyred wheels. |
| | 4′ 6″ | Overoll pan | 6/8 | 5′ 3″ x 8′ 9″ x 6′ 8″ Weight: 38 cwt | 3½ h.p. petrol | Available as fixed or portable model. Overhead drive by bevel and pinion. |
| | 4′ 6″ | as above | 6/8 | as above Weight: 39 cwt | 5 h.p. petrol or diesel | as above. |
| | 5′ 6″ | as above | 10/12 | 6′ 0″ x 10′ 5″ x 6′ 11″ Weight: 50 cwt | 8 h.p. petrol or diesel | as above. |
| RANSOMES & RAPIER LTD. | 3½T | Tilting drum | 3½ | 3′ 0″ x 6′ 4½″ x 5′ 11″ Weight: 14 cwt (13 cwt with 2 wheels) | 1½ h.p. petrol or diesel water cooled or T.V.O. or electric | 4 steel or pneumatic tyred wheels 2 wheel model also available. Discharges on both sides. |
| | 5T Junior | as above | 5 | 3′ 0½″ x 6′ 4″ x 6′ 3″ Weight: 14 cwt | 1½ h.p. petrol, hopper cooled. | 4 steel or pneumatic tyred wheels Automatic water tank available. |
| | 7T | Tilting drum, hopper elevated loader | 7 | 6′ 6″ hopper raised (11′ 2″ max.) x 9′ 8″ x 10′ 1½″ hopper raised (8′ 6″ lowered) Weight: 41 cwt | 6 h.p. petrol or diesel | Mounted on 4 steel wheels. 8 gall. water tank. Skip shaker may be incorporated also pneumatic tyred wheels. Available for side or end discharge. |
| | 7NT | Non-tilting rotary drum hopper elevated loading | 7 | 11′ 8″ (7′ 3″ hopper raised) x 8′ 11″ x 8′ 11″ (8′ 6″ hopper lowered) Weight: 39½ cwt | 6 h.p. petrol or diesel, T.V.O. or electric | 4 steel or pneumatic tyred wheels. Skip shaking gear, 8 gall. water tank. |
| | 10NT | as above | 10 | 12′ 7″ (7′ 11″ hopper raised) x 9′ 7″ x 9′ 9″ (9′ 6″ hopper lowered) Weight: 52 cwt | 9 h.p. petrol or diesel, T.V.O. or electric | As above but with 12 gall. tank. |
| | 14NT | as above | 14 | 14′ 1″ (8′ 8″ hopper raised) x 11′ 1½″ x 10′ 7½″ (10′ 5½″ hopper lowered) Weight: 80 cwt | 12 h.p. petrol or diesel T.V.O. or electric | As above but with 14 gall. tank |
| STOTHERT & PITT LTD. | 3½T | Tilting drum | 3½ | 4′ 0″ x 9′ 0″ x 5′ 9″ Weight: 11 cwt | 1½ h.p. water or air cooled petrol. Electric T.V.O. or diesel | 4 steel or pneumatic tyred wheels. Two-wheel model also available. |
| | 5T hand fed | Tilting drum | 5 | 4′ 4″ x 7′ 3½″ x 6′ 1½″ Weight: 14 cwt | 1½ h.p. water or air cooled petrol also diesel or electric | 4 steel or pneumatic tyred wheels. Bevel gearing from drum driving shaft to drum. |
| | 5T loader fed | Tilting drum hopper elevated loading | 5 | 8′ 10½″ x 11′ 11″ x 9′ 0″ Weight: 30½ cwt | 4 h.p. water or air cooled petrol or diesel also electric | 4 steel wheels. Incorporates 8 gall. water tank. |
| | 5NT | Non-tilting rotary drum, hopper elevated loading | 5 | 4′ 5½″ x 8′ 1½″ x 8′ 5½″ Weight: 30½ cwt | 5 h.p. petrol or diesel | 4 steel wheels (rubber tyred available). Incorporates automatic shaker gear. Hoist winch if required. 8 galls. water tank. 2 wheel model available. |
| | 7NT | as above | 7 | 5′ 5½″ x 8′ 11½″ x 8′ 7″ Weight: 39 cwt | 6 h.p. petrol or diesel | As above. |
| | 10NT | as above | 10 | 6′ 2½″ x 9′ 2½″ x 9′ 10″ Weight: 48 cwt | 7 h.p. petrol or diesel | As above but no 2 wheel model. Water tank 16 galls. |
| | Super 14 Victoria | Rotary drum (1) pivot loader (2) Rising loader | 14 | (1) 16′ 7½″ x 16′ 7½″ x 15′ 0½″ Weight: 71 cwt (2) 13′ 6½″ x 10′ 9½″ x 11′ 0″ Weight: 95 cwt | 10 h.p. petrol or diesel Electric also | Mounted on 4 wheels. Also available on high truck for 5′ 6″ discharge. Syphon water tank. 28 and 56 cu ft models also supplied. |
| VARRAN PLANT ENGINEERS | The Varran | Direct rotary barrow mixer | 3 dry, 2 wet | 2′ 4″ x 4′ 6″ x 4′ 6″ Weight: 3½″ cwt | ½ h.p. electric | Mixing takes place in the barrow which has a circular pan body of 16 gauge. Loading of materials takes place away from the machine by special hand skip. The narrow rotating blade is lowered into the barrow and the blade then rises and falls whilst rotating thus agitating and mixing at the same time. |

# Vibrators

**1.** E.40 electric vibrator by Compactors Engineering Ltd. Vibration frequency 9,500 to 10,000 v.p.m. 12 or 18 ft. flexible shaft.

**2.** C.P. 5180 vibrator by Consolidated Pneumatic Tool Co. Ltd. Pneumatic operation with air consumption under 85 cfm. Weight 92½ lbs.

**3.** CCL-Tremix petrol driven vibrator by Cable Covers Ltd. 17,000 vibrations/min. Interchangeable with electric unit.

**4.** Humdinger electric vibrator by ACE Machinery Ltd. 2½/3 h.p. motor for all voltages. Frequency 11,500 v.p.m.

**5.** Model 3 Poker vibrator by C. H. Johnson (Machinery) Ltd. (Also shown Fig 8. being used on sea defence works on South East coast). Power unit 4 h.p. petrol engine or 3 h.p. electric motor—interchangeable.

**6.** C.C2 pneumatic compactor by Holman Bros. Ltd. Compacting widths 8ft 6in or 11ft 6in. Weight 260 or 290 lbs.

**7.** Wacker Popular vibrator by David Roberts & Co. (Engineers) Ltd. Weight 30 lbs., frequency 9,000/11,000 v.p.m. Powered by 2 stroke engine

**9.** Baxtul road screed vibrator by Flexible Drive & Tool Co. Ltd. with 1¾ h.p. petrol engine. For screed boards up to 22ft. long.

A List of Manufacturers :—
ACE Machinery Ltd. Cable Covers Ltd. Compactors Engineering Ltd. Consolidated Pneumatic Tool Co. Ltd. Flexible Drive & Tool Co. Ltd. Holman Bros. Ltd. C. H. Johnson Machinery Ltd. David Roberts & Co. (Engineers) Ltd. Stothert & Pitt Ltd. Winget Ltd.

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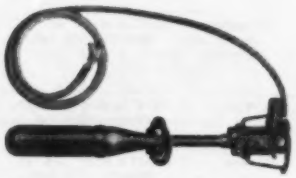

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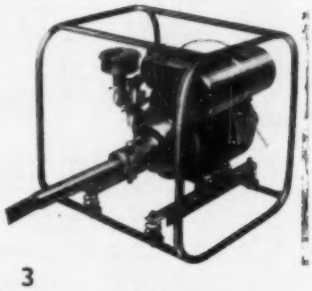

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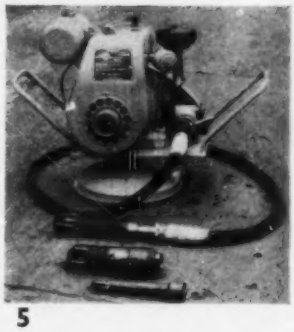

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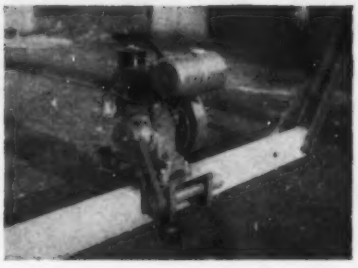

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## Mixers Continued

| Supplier | Model | Type | Capacity in cu ft | Overall Dimensions W x L x H | Power Unit | Remarks |
|---|---|---|---|---|---|---|
| WINGET LTD. | 2T | Tilting Drum | 3·2 | 2′ 5¼″ x 4′ 2″ x 4′ 2½″ Weight: 3½ cwt | .9 h.p. Villiers or 1.22 h.p. JAP petrol or electric | 2 pneumatic tyred wheels. Loading height 2′ 8½″. Discharge height 2′ 0½″. Suitable for towing. |
| | 3½T | as above | 3½ wet | 3′ 3″ x 6′ 7″ x 5′ 5″ Weight: 13½ cwt | 1½, 1½, 1¾ h.p. petrol or diesel, air or water cooled | 4 steel or pneumatic tyred wheels. Loading height 3′ 6″, discharge height 2′ 4″. Also available as stationary unit for electric drive. |
| | 5T | as above | 5 wet | 3′ 7″ x 7′ 1″ x 5′ 8″ Weight: 16½ cwt | 2½ h.p. petrol, water cooled. 1½ or 2½ air cooled diesel | 4 steel or pneumatic tyred wheels. Loading height 3′ 5″. Discharge height 2′ 0½″. |
| | 3½T Trailer | as above | 3½ wet | 6′ 5¼″ x 6′ 9½″ x 5′ 5½″ Weight: 13½ cwt | 1½, 1½, 1¾ h.p. petrol or diesel, air or water cooled | 2 pneumatic tyred wheels. Designed for high speed towing. |
| | 7T. HR | Hopper fed, tilting drum | 7 | 6′ 2½″ (10′ 2½″ hopper down) x 8′ 9½″ x 7′ 4″ (10′ 5½″ hopper up) | Petrol, diesel, TVO, or electric | 4 steel or pneumatic tyred wheels. Angle of discharge 60 deg. Loading height 1′ 0″, discharge height 2′ 6″. |
| | 7NT | Non-tilt rotary drum | 7 | 7′ 2″ (10′ 10″ Loader down) x 9′ 3″ x 8′ 4″ (8′ 2″ Loader down) Weight: 43 cwt | 8 h.p. petrol or diesel, air or water cooled | 4 steel or pneumatic tyred wheels. Loading height 10″. Discharge height 2′ 5″. Hand operated hopper shaker. Also supplied as raised discharge model. |
| | 10NT | as above | 10 | 7′ 8″ (12′0″ loader down) x 9′ 6″ x 8′ 7″ (9′ 6″ loader up) Weight: 55 cwt | 10 h.p. as above | As above but loading height 1′ 0″, discharge height 2′ 7″ |
| | 14NT | as above | 14 | 9′ 9″ (13′ 4″ loader down) x 11′ 7″ x 9′ 8″ (10′ 6″ loader up) Weight: 61½ cwt | 12 h.p. as above | As above but loading height 1′ 3″, Discharge height 2′ 11″. |
| | 10HTH | Weigh batching tilting drum mixer. Hydraulic operation | 10 | 7′ 4″ x 7′ 5″ (11′ 4″ working length) x 8′ 6″ (12′ 0″ loader up) Weight: 50 55 cwt | 8 10 h.p. petrol or diesel or electric | 4 steel wheels. Loading height 1′ 2″ discharge height 2′ 11″. Angle of discharge 65 deg. Weigh batching mechanism built into mixer. |

Mark II by Kwikform Ltd.

## Formwork

List of Manufacturers:—

Acrow (Engineers) Ltd.

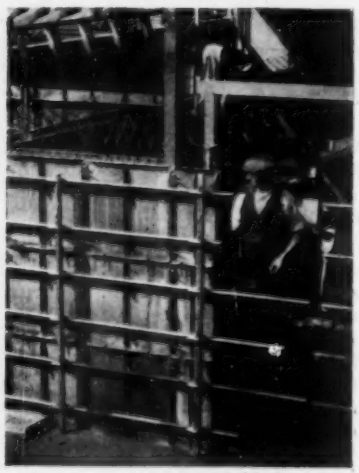
Blaw Knox Ltd.

Contractors and Industrial Equipment Ltd.

James Grundy & Co. Ltd.

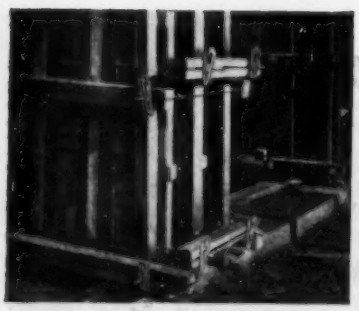
Kwikform Ltd.

David Roberts & Co. (Engineers) Ltd.



Blawform by Blaw Knox Ltd.

Road Curves by Acrow (Engineers) Ltd.



Robel Ties by David Roberts Ltd.

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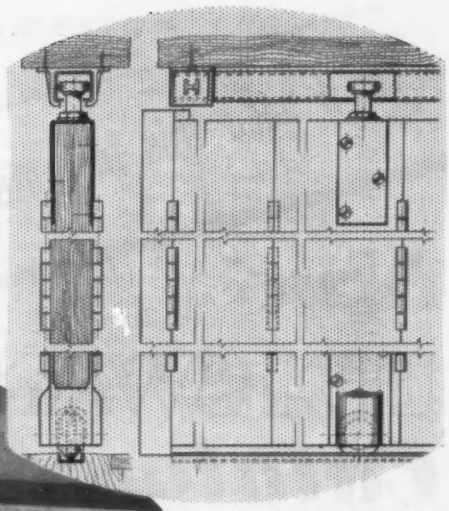

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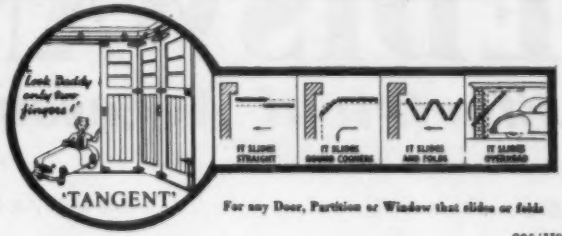


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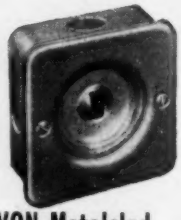

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# Better Factory Design

AT the Production Conference held at Olympia and sponsored by the Institution of Production Engineers, a paper "Investing in Better Factory Design, Construction and Layout" was read by Mr. D. T. Myers, A.R.I.B.A. Unfortunately it seems that only a few architects and members of the building industry have attended this exhibition, presumably because the building industry does not seem greatly concerned with production problems.

The paper was a very interesting contribution to the Conference and contained much food for thought, especially in regard to future trends in the requirements for factory buildings. As the paper was presumably addressed mainly to management and production engineers it did not contain much detailed information of the type which tends to attract architects, nonetheless it contained ideas of which architects need to be fully aware.

While not knowing Mr. Myers' work his paper leaves an impression that he has been fairly closely associated with the motor car and similar engineering industries and has studied, in particular, the American automobile factory practice but that he may not appreciate so fully some of the problems of buildings for the many very different types of industrial production, such as those needed for the chemical, paper and textile fields. However, Mr. Myers' analysis of the problem of factory design and construction is applicable generally even if in detail one cannot always agree with him.

The following are among the points which Mr. Myers made—the shape of the space and certain of its characteristics depend upon the individual industry and its requirements. The major issue is that industry never seems to have enough space, consequently designing for industry means creating flexible space, specifically for that industry, in such a way that it can expand or contract properly and re-adjust itself easily and economically to meet changing demands. Flexibility incorporated in the design means visualizing changes in production which will require either new machines or re-location of old machines and the future expansion of the building to accommodate increased production. Factory buildings can no longer be thought of as "process" on the one hand and "building" on the other. The building as such should be the result of conditions imposed by the manufacturing process and a crystallization of the thoughts of the many specialists involved in its design. The result of this is a fusion of building and process.

He points out that if the building does not work then the process cannot operate at maximum efficiency and the result is a faltering production tool. Thus the building has the key part to play in production, thus consideration of siting and transport, initial building costs and maintenance are all reflected in the final price of a product. He suggests that the aim should be to produce industrial buildings which will work as hard as the machines they house, thus enabling the production of finished goods economically. To continue to compete in world markets and enjoy any trading advantages leading to an increased standard of living it is essential that the buildings of industry make a direct contribution. It is necessary to strip down and examine the costs of production and architects have their part to play in ensuring the economy and efficiency of the buildings which house the machines. Factory buildings become units of space designed around the differing requirements of the individual industries, their production areas, storage areas and office areas. An applied analysis of space to each of the related stages in the manufacturing process increases the awareness of the true nature of space and its elements and thus provides for the industry to function at its full potential.

Mr. Myers suggests that the better factory must have a more intelligent and realistic use of space and will have the following:

1. A production space engineered for efficient running with preplanned maintenance, flexibility of production and expansion designed into the building.
2. Storage space designed closely around the movement of material yet permitting flexibility.
3. An office space designed around the exchange of information rather than pieces of paper.
4. A welfare space which is the whole factory and not merely the recreation areas and amenities.
5. An enclosure to the space which will work to maintain whatever climatic conditions are necessary for a process and so cut down heating and cooling bills, and which will possibly make greater use of standardisation and prefabrication.
6. A site chosen for both present and future needs.
7. Generally, economical buildings which will go up on schedule, and, once up, will require little maintenance.

Mr. Myers stresses very heavily the need to design for this flexibility to provide the maximum facility for making changes as technical advances take place. He even suggested that one should anticipate the day when the building is to be taken over for some other industrial use but this seems far fetched and seems in contradiction to the suggestion that every industry tends to have requirements particular to itself.

He had very much to say on the effects that automation may have on factory building requirements and suggested that this might reduce the accommodation needs, in some instances by as much as 50 per cent., a view which the Chairman of the meeting, Sir Herbert Manzoni, questioned by citing an example of a well-known strip-mill where automation appeared to have increased the area needed.

On the details of achieving flexibility he suggested that columns sterilize 9 to 16 sq ft of working floor space and justify adopting very large span systems. However, the cost involved in producing these large spans is undoubtedly great and could only be justified if future trends indicated that they are likely to be increasingly necessary in the future. He suggested also the strengthening of the bottom cord of trusses to allow for future overhead conveyance and handling equipment as the extra cost is negligible; it is extremely difficult to decide what loads need to be designed for in the future and just where they will be needed as these have quite a considerable influence on the truss designs.

In relation to floors Mr. Myers seemed to feel that it was necessary to design these so that machines can at some future date be placed anywhere and advocated a somewhat elaborate system of construction to meet his proposal. The wisdom of this proposal seems questionable as the future loading both in quantity and position must of necessity remain an unknown quantity while the rigidity of floors to reduce vibration and the resulting noise is vitally important in so many factories. He illustrated his paper with a photograph of a system adopted in an American factory which appears to be so extraordinarily costly, in order that it should be flexible, that one is left wondering whether it is worthwhile or whether it would not pay better to build only what is needed at the moment and rebuilding only what must be changed at a later date.

Very wisely Mr. Myers drew attention to the growing importance of adequate thermal and sound insula-

## Better Factory Design

tion and that these were factors that needed to be considered from the early stages of the design and not to be an added afterthought. He put forward a suggestion that since in so many industrial buildings the plant obstructs much of the light received from windows so that artificial light is almost always necessary, the complete omission of windows and roof lights might be justified and thus aid thermal and sound insulation problems. He suggested that a powerful argument against resorting to artificial lighting and ventilation and the consequent scrapping of windows is that of phsychology, but he pointed out that it was interesting to know that in Sweden, where the greater part of her defence programme is underground, a survey indicated that there had been no adverse effect on the health and comfort of the workers. He suggested that measures of control now available could often provide much more satisfactory and constant working conditions by artificial rather than by natural means.

He suggested that early attention should be given to the possibilities of isolating noisy processes from the rest of a factory and drew special attention to the noise created by trolleys, fork-lift trucks and reverberations from presses which require good floor insulation by separating and floating the various elements to break the diaphragmatic action induced by impact. A suggestion put forward for consideration was that there might be a system of sound baffles, which could fold back into walls when not in use, as an aid to the breaking up of sound in long buildings. The effectiveness of such an idea seems questionable since effective baffles demand mass and surely machines, owing to their cost, need to be in such constant use that baffles have either to be permanent or not there at all.

Throughout the paper Mr. Myers seemed to have completely overlooked the importance of limiting space in order to limit fire risks. The impact of certain relatively recent disastrous factory fires does not appear to have rung a bell. Mr. Myers discussed the importance of preplanned maintenance as he seemed to expect that full automation might necessitate 24-hour operation of machines in order to justify their very heavy capital cost.

On the subject of storage he had much of value to say but I would disagree with his objections to the use of U or L shaped buildings as these often have great advantages. Storage is certainly changing both in its form and its location and it is now more and more becoming the custom to provide a series of stores so placed in relation to the factory equipment that materials and components are fed in to the process from stores close to where they are needed and not from large bulk stores serving the whole factory.

Fork-lift trucks and conveyors have also influenced very considerably earlier theories on storage. Several speakers in the subsequent discussion supported the idea of placing storage over the using machines on an upper floor and several of the speakers stressed that the availability of land was such that multi-storey buildings should be used whenever the process permitted as the nation could no longer afford the land for large straggling single-storey factories.

Mr. Myers said he wanted to make specific reference to floors as these could not be skimped or cheaply finished due to the heavy treatment they receive from fork-lift trucks and the like, but unfortunately he gave no solution to this problem which is always present in all industrial buildings.

Mr. Myers drew attention to the advantages of prefabrication in factories and gave an impression that this might solve many problems, especially if there could be an agreed "standard bay" dimension. This idea of a standard bay did not seem to line up with his suggestion that the needs of every industry are individual and if he had studied closely the very varying demands produced by the enormous range of requirements of the multitude of manufacturing industries it seems unlikely that any standard bay dimension would suit more than a few. In the comparatively narrow field of their requirements he suggested that school buildings had already demonstrated the value of prefabrication but he appears to have omitted to appreciate that the relatively small module of 40in, which would have little or no relation to the large span dimensions he wished to standardize, appears to be the largest workable dimension having general application to schools.

On the subject of standardization Mr. Myers suggested that there were two types, standards of performance and standards of materials and equipment. He omitted any reference to standard components in agreed sizes, which might well provide a means of overcoming the need for his standard bay size. He pointed out that we have not yet agreed in this country a method of modular co-ordination but drew a curious conclusion from an example of American modular co-ordination when he called attention to the fact that it had permitted one firm to reduce its production line of windows from 2,000 to 300. He might like to know that both the wood and metal window industries in this country achieved far more drastic reductions than this by agreeing standardization without an agreed module and no doubt these industries hope to achieve even narrower production ranges when a British module is agreed.

Having made some observations on the astronomical maintenance expenditures and heat losses in factories in this country he pointed out that there are nevertheless some of the finest factories in the world in this country, although they are not the common run. Certain of the speakers in the discussion, with whom I would agree, questioned whether Mr. Myers appreciated that in U.S.A., which he seemed to think have wonderful factories, there are just as many factories which are as bad as ours and many which are worse as the Factory Department of the Ministry of Labour ensure that conditions are at least tolerable in our factories while in U.S.A. there are many where the conditions are not even up to our minimum level and where small attention is given to the important aspect of human relations. One speaker suggested that Mr. Myers would find factories even more efficient than those in U.S.A. in almost every European country and which would justify his examination.

The most excellent, and one of the main themes of the paper, was the need for research into the requirements of factory buildings and the advantages to be gained by having full data resulting from proper survey. He made reference to the programme of research of this nature which B.R.S. is about to commence under the auspices of the Midland Regional Board of Industry. The need for research into factory buildings has been apparent for many years and it is very gatifying to know that it has started even if it is only, as yet, in a small way. It seems doubtful, however, that the parallel example of the gain from research into schools quoted in the paper is in fact quite as good as the picture that was painted. At least some of the advantages referred to, such as cost reductions and greater percentage of total floor area used for teaching, have not been entirely the result of getting what is right and necessary through research, but in part the result of the lowering of design standards to meet national economic necessity. As building costs, especially as capital costs, are a relatively small percentage of the cost of the products made in factories the buildings can certainly afford to be of the correct design standards in order to make a full contribution to industrial productivity which Mr. Myers quite rightly advocated.

*DUTCH UNCLE*

*This recessed lighting scheme of the canteen in the American Embassy was designed by Philips*

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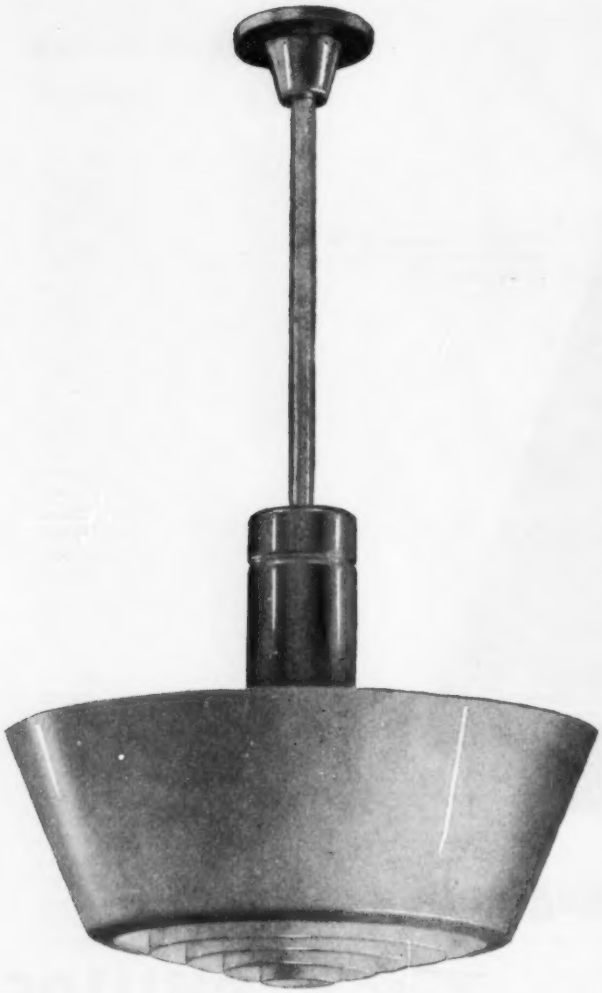

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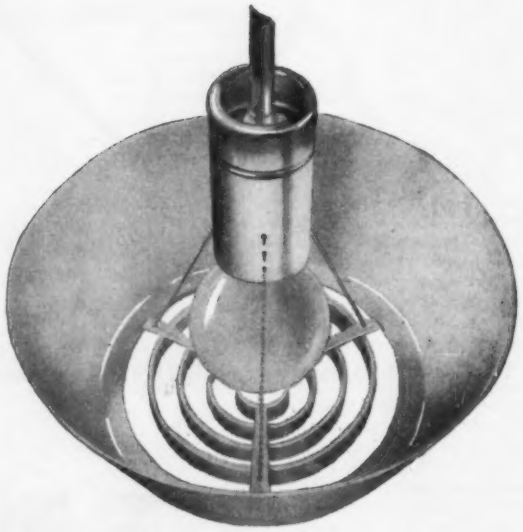

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# Industrial Notes

● The modern laboratories and processing plant under construction for the proposed atomic reactor at Dounreay Thurso, Caithness, Scotland, will entail the use of 29,231 sq. yds. of insulated steel deck roofing supplied by The Ruberoid Co. Ltd. Among those buildings already completed in the scheme, which is being carried out by Whatlings, Ltd., of Thurso, for the U.K. Atomic Energy Authority, is a main group comprising administrative and surgical block with workshops, garage and fire station, as well as a chemical group consisting of laboratory and administrative rooms. The 135 ft diameter steel sphere enclosing the reactor is already half-completed and a considerable amount of internal structure has been installed. By next year, a large labour force of about 2,000 people is expected to be working on the site, the station being scheduled to come into operation in 1959.

● More than 60,600 sq yds of insulated asbestos cement cavity deck roofing are being supplied by The Ruberoid Co. Ltd., for a new press shop, assembly shop and panel store under construction for Vauxhall Motors Ltd., at their factory in Luton, Beds. This scheme is part of a £36 million expansion programme, and will ultimately provide 1¼ million sq ft of additional buildings at Luton. General construction is being carried out by Sir Robert McAlpine and Sons Ltd. The Architects are Howard Souster and Fairbairn.

● The new showrooms of A. D. Foulkes Ltd., at Warwick Row, Coventry, were designed by Rolf Hellberg and Maurice Harris. They provide up-to-date facilities for architects and builders seeking information on kitchen and household equipment. In addition there is a Demonstration Theatre.

● The Marley Tile Company Limited announce that they will shortly open a roof tile manufacturing plant at Salisbury, Southern Rhodesia. Capacity production will be ensured by all the latest methods employed at the other eleven Marley factories in which a total of 600 million roof tiles are made annually. The Salisbury plant will be the second the Company has built in South Africa. A floor tile factory began operating at Nigel, in the Transvaal, two years ago.

● A complete range of portable electric tools for use in the manufacture, maintenance, and repair of farm machinery and motor vehicles will be exhibited at the Royal Show at Newcastle, July 3 to 6, by Black & Decker Ltd., occupying stand No. 74, Block and Avenue No. D3.

● At the third Annual General Meeting of Fidor (Fibre Building Board Development Organisation, Ltd.), held at Amsterdam on May 31, Mr. E. R. T. Foad was elected chairman of the Governing Council, and Mr. E. P. Lawrence, vice-chairman. Mr. Foad is managing director of Wm. Brandts (Wallply) Ltd., and Mr. Lawrence, managing director of Scharin Products Ltd.

● Mr. Robert Duncan Lawrie, foundry manager of Distington Engineering Company Limited (United Steel Companies Limited), Workington, died at his home on Friday 25th May 1956, at the age of 60 after a long illness.

● John H. Goodman, formerly with Expandite Ltd., has joined Evomastics Ltd., of Stafford, and has been appointed Area Manager of London and Home Counties, where he will be engaged on sales development of the new mastic products of the company to be marketed under the name of Evomastic.

● Over four thousand dealers throughout Britain have been invited to take part in a window display competition which started on Monday, June 11th. Competitors will be the authorised appliance and television dealers of the English Electric Company who are offering twenty-five prizes totalling £300 for the most original and effective designs. Competing displays must include one or more items from the English Electric range of appliances or television receivers, but the dealer may use any other display material he chooses. The country will be divided into eight areas for the purpose of preliminary judging which will be done by the Company's Domestic Appliance Area Managers during the three weeks from June 11th to June 30th. The names of the winners of the £50 national prize and of the area awards are to be announced by mid-July.

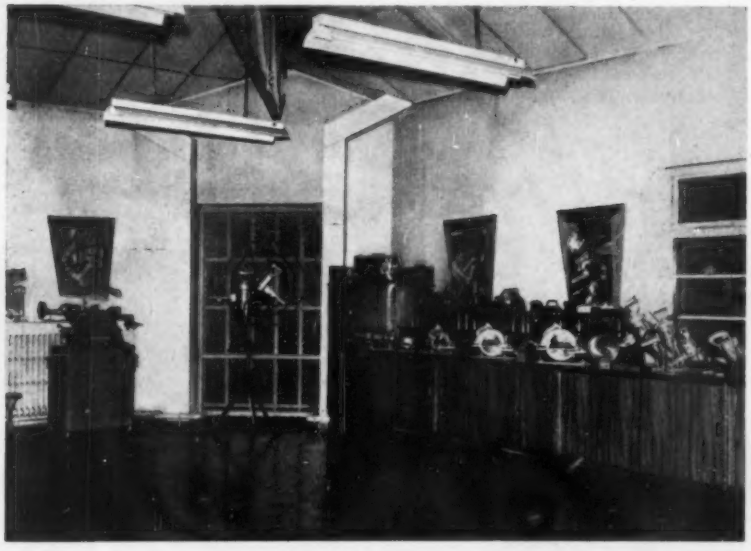
● The Portable Electric Tool Manufacturers' Association is acting as host to the Federation of European Electric Tool Manufacturers' Associations at the Annual International Conference which opens at St. Ermin's Hotel, Caxton Street, Westminster, S.W.1, on Wednesday, 27th June. The conference inauguration will be under the chairmanship of Mr. C. U. Peat, who is also chairman of P.E.T.M.A. General proceedings will be chaired by Mr. Herzog, of France, the President of the Federation of European Electric Tool Manufacturers' Association.

● Henry Wiggin and Company Ltd. announce that they have purchased the specialised high nickel alloy fabricating plant at Hereford, which they designed and erected for the Ministry of Supply and have been operating since 1954. The Company is a wholly-owned subsidiary of the Mond Nickel Company Limited, an affiliate of the International Nickel Company of Canada, Limited.

● Hunting Geophysics Limited, announce the appointment of Dr. Wojieck Domzalski Ph.D., B.Sc., A.R.S.M., D.I.C., as their Chief Geophysicist.

● Editorial Services Ltd. have been appointed public-relations advisers to the Domestic Refrigeration Development Committee. This committee, which is acting through the British Refrigeration Association, comprises the leading firms in the domestic refrigeration industry and its purpose is to increase the use of refrigeration by the general public.

● The Turriff Construction Corporation Ltd. has appointed Mr. John Llewellyn as Group Development Executive to assist in developing the activities of the Corporation and its subsidiary companies.



*Part of the Demonstration Theatre which is a feature of the new Black & Decker Branch Office in Manchester*

# NEW PRODUCTS

1

The new Permoglaze eggshell finish by Permoglaze Ltd., dries quickly to a tile-hard finish that is resistant to steam and condensation. Makers claim that there is no drip or spatter from the brush and illustration, Fig. 1, shows the thixotropic properties of Permoglaze.

★

This lighting fitting for commercial applications, Fig. 2, is an enclosed translucent type, No. F.9075, by Holophane Ltd. The prismatic glass unit consists of two moulded glasses, the upper reflecting, the lower diffusing.

★

Allweather Paints Ltd., announce a new advance in decorative finishes, their Pitan Thixotropic paint. They claim that during normal use, Pitan Thixotropic paint will not spill if the tin is knocked over, nor will it drip off the brush. Pitan Thixotropic paint is available in 16 colours, in addition to Black and White, and can be supplied in gloss or flat.

The J10, Fig. 3, is the latest addition to the Hurseal range of radiators. It is an hermetically sealed, oil filled, 2 column safety radiator of 1 kW loading. It is 1ft 5in high x 3ft 2in long x 3¼in wide (8in spread of feet).

★

The Eskimo Weather Excluder, Fig. 4, is available in two sizes, 32 and 36in long, by Middleton Bros. It has a rubber insert to exclude draught and weep holes from a drainage channel behind the curved front. Height, ⅞in.

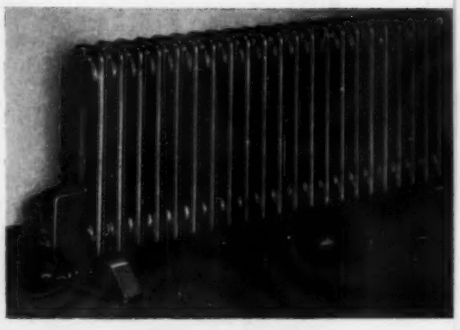
★

Blackwood Hodge, U.K. distributors of Huber-Warco products announce a new addition, Fig. 5, to the range of rollers. The newcomer is a 3-5 ton variable weight tandem roller with torque convertor and 41 h.p. water cooled engine. Other features include a spur-gear final drive mounted in the frame, large capacity sprinkler tank and over-sized, double-plate clutches for forward and reverse shifting.

★

Ventrot by British Bitumen Emulsions Ltd., is a blend of residual bitumens applied ¼in thick to a solid sub-floor to provide a continuous layer impervious to rising dampness both in liquid and vapour form, and over which an even screed of at least 2in in thickness is laid in preparation for the floor finish. By its use timber flooring laid in direct contact with the concrete will it is claimed, be protected indefinitely against the ingress of moisture which permits growth of fungi leading to the condition known as dry rot and it is also suitable for use where linoleum, rubber sheeting, P.V.C. sheeting, magnesite composition, thermo plastic tiles, etc. are to be laid on concrete where there is a possibility of the presence of rising damp.

2



3

4

5

St. Joseph's R.C. One Form Entry and Junior School, Southdene, Kirkby, Liverpool.
*Architects:* L. A. G. Prichard & Son, A.R.I.B.A.
*Contractors:* Frederick Clark & Son, Liverpool

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# CANADIAN HARDWOODS

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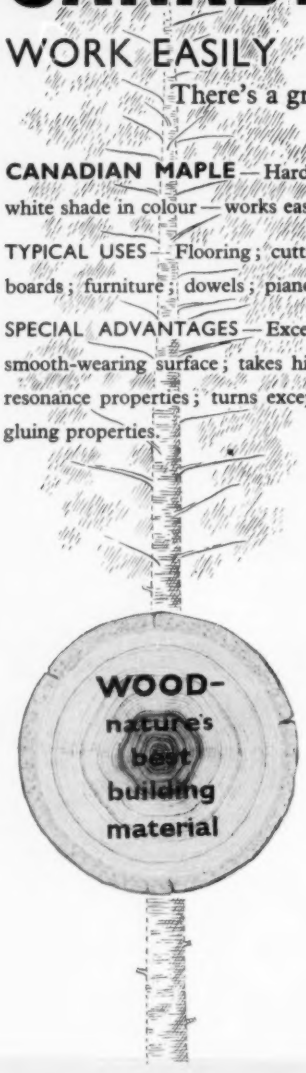



**CANADIAN MAPLE** — Hard and heavy, creamy-white shade in colour — works easily for a hardwood.

TYPICAL USES — Flooring; cutting boards; hammer boards; furniture; dowels; piano actions; handles.

SPECIAL ADVANTAGES — Exceptionally hard and smooth-wearing surface; takes high polish; excellent resonance properties; turns exceptionally well: good gluing properties.

**CANADIAN BIRCH** — a hard-wearing, wide-utility hardwood of uniform texture, ranging in colour from light yellow to reddish brown.

TYPICAL USES — Flooring; furniture; interior trim; ladder rungs; shuttles, spools and bobbins; dowels, handles.

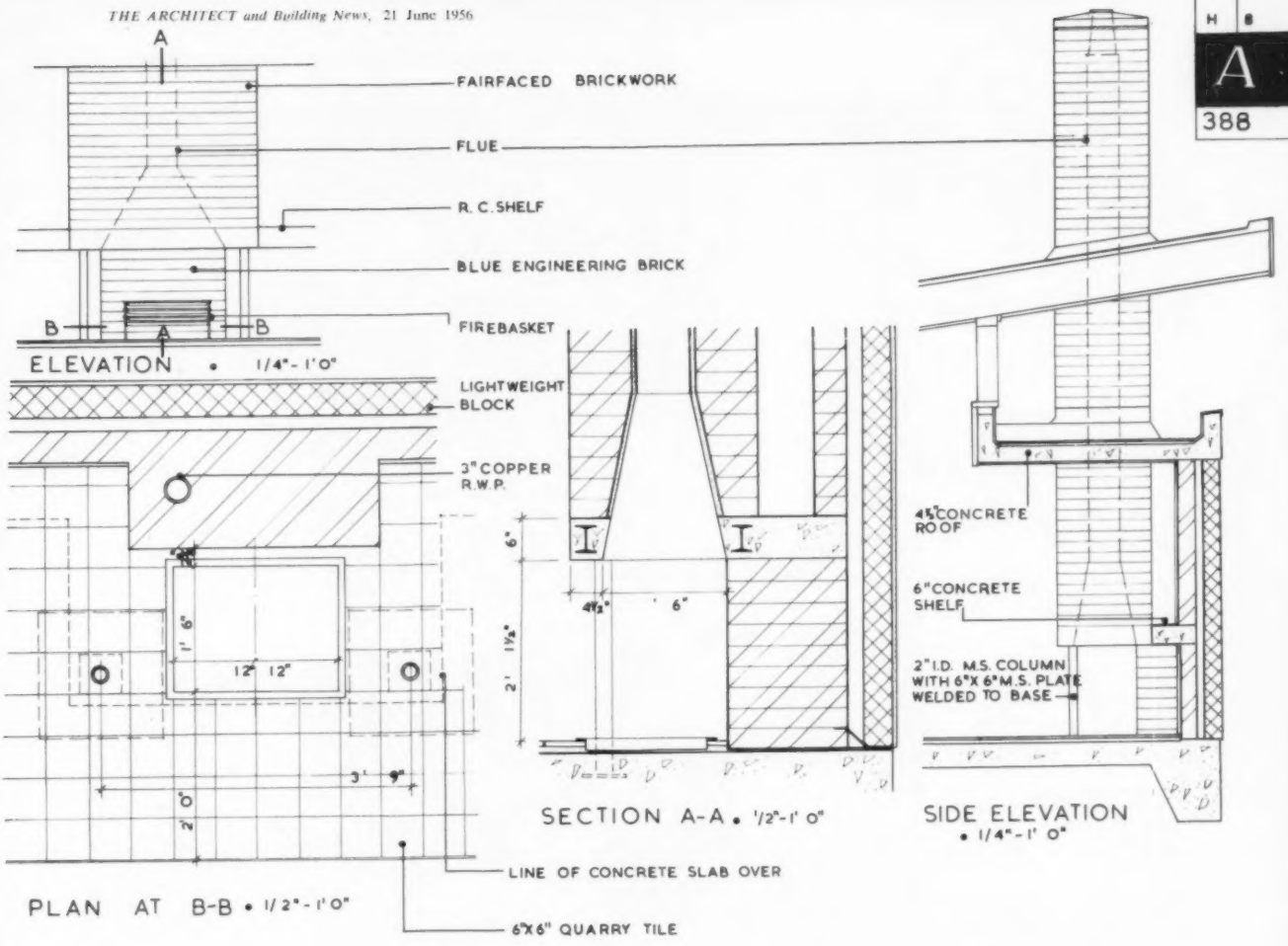
SPECIAL ADVANTAGES — Strong and resistant to impact; hard and smooth-wearing surface; uniform texture; machines easily; easily stained to match other furniture woods.

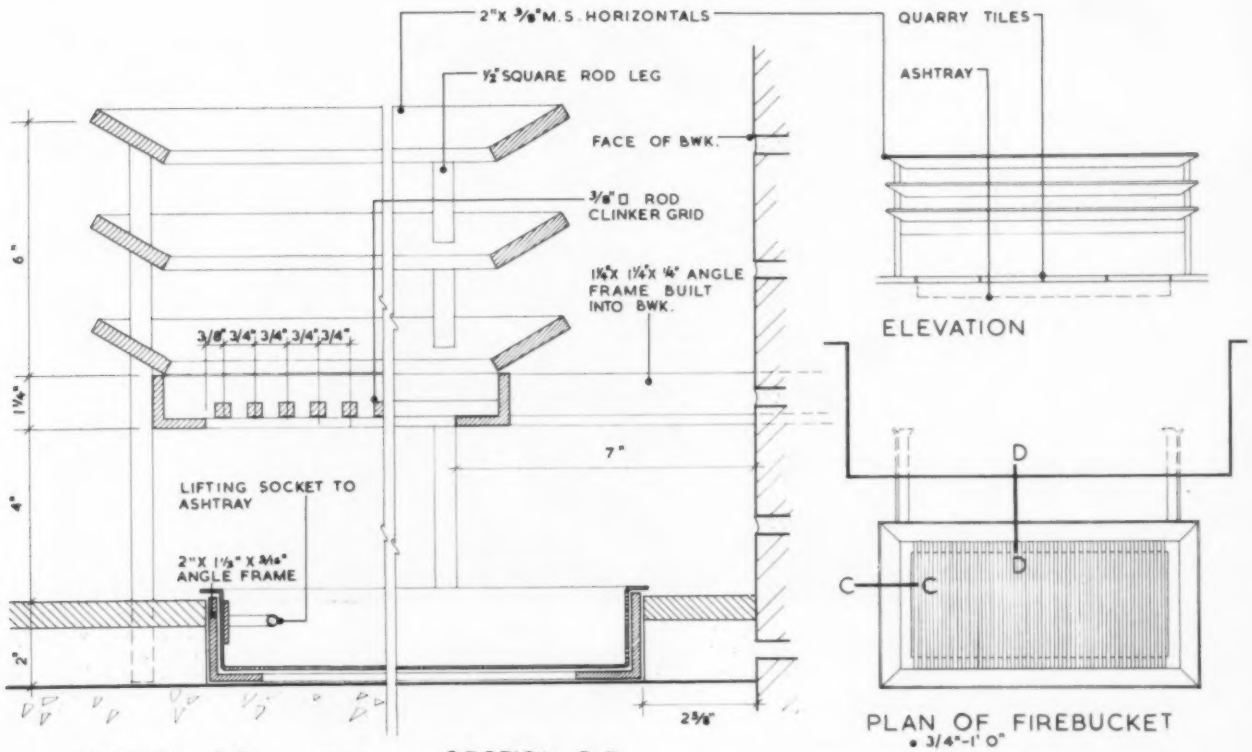
**CANADIAN BASSWOOD** — shading from creamy-white to very light brown, this softer hardwood works exceptionally well.

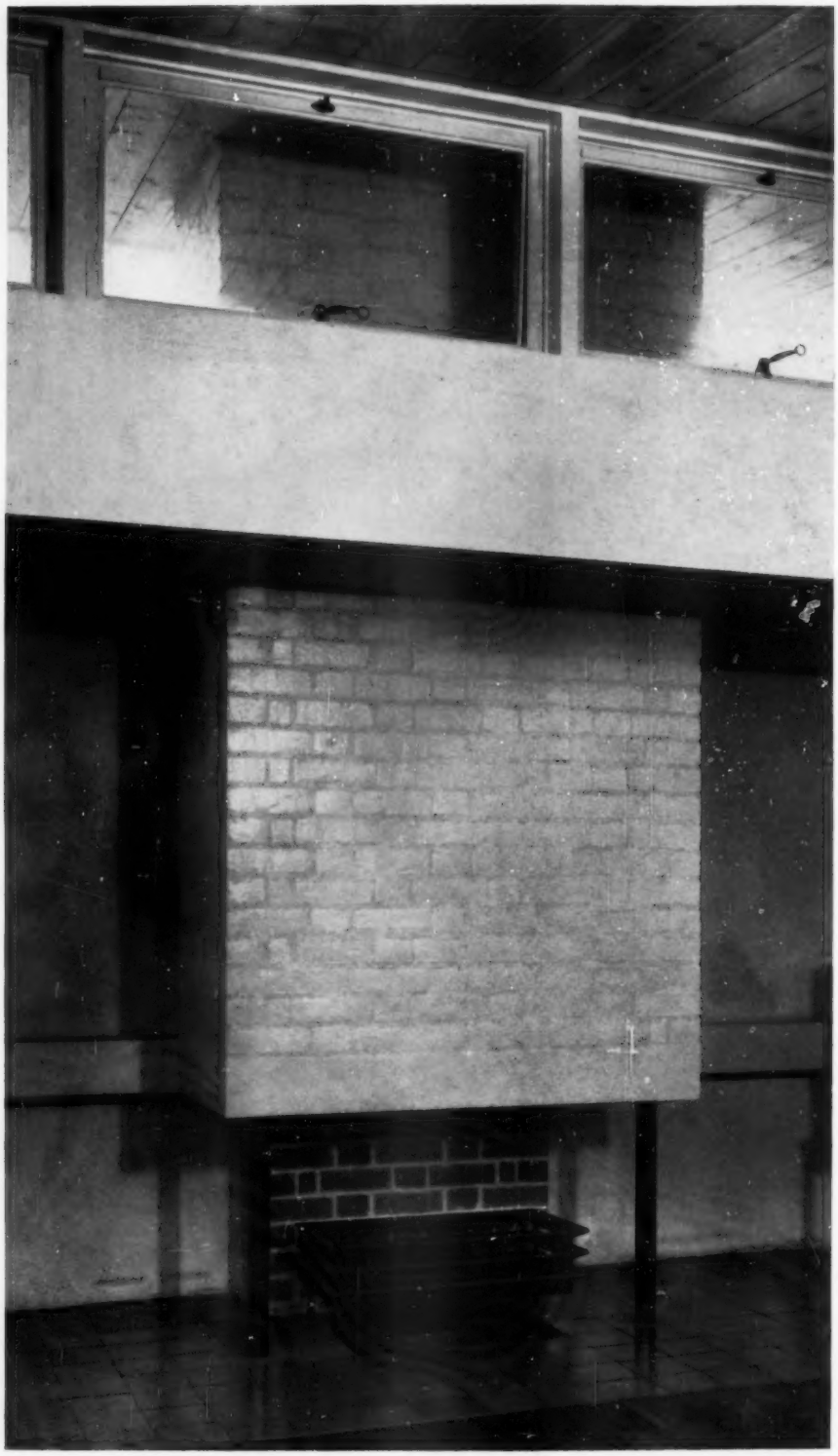
TYPICAL USES — Furniture; beekeeper supplies; patterns and models; picture frames; piano keys; Venetian blinds: foodstuff containers.

SPECIAL ADVANTAGES — Soft-textured hardwood; works exceptionally well under tools; easily dried; takes smooth finish; good gluing and nail-holding properties; takes paints and lacquers well; practically no taste or odour.

**FOR FURTHER INFORMATION** concerning Canadian woods contact The Commercial Counsellor (Timber), Canada House, Trafalgar Square, London, S.W.1


A
FAIRFACED BRICKWORK
FLUE
R. C. SHELF
BLUE ENGINEERING BRICK
FIREBASKET
B
A
B
ELEVATION • 1/4"-1'0"
LIGHTWEIGHT BLOCK
3" COPPER R.W.P.
1' 6"
12" 12"
3' 9"
2' 0"
PLAN AT B-B • 1/2"-1'0"
LINE OF CONCRETE SLAB OVER
6"X6" QUARRY TILE
6"
4½"
6"
2' 1½"
SECTION A-A • 1/2"-1'0"
4½" CONCRETE ROOF
6" CONCRETE SHELF
2" I.D. M.S. COLUMN WITH 6"X 6" M.S. PLATE WELDED TO BASE
SIDE ELEVATION
• 1/4"-1'0"


2"X 3/8" M.S. HORIZONTALS
½" SQUARE ROD LEG
FACE OF BWK.
3/8" □ ROD CLINKER GRID
1½"X 1½"X ¼" ANGLE FRAME BUILT INTO BWK.
3/8", 3/4", 3/4", 3/4", 3/4",
6"
1½"
4"
2"
7"
LIFTING SOCKET TO ASHTRAY
2"X 1½" X 3/16" ANGLE FRAME
2⅜"
SECTION GC • 1/4 F.S. • SECTION D-D
QUARRY TILES
ASHTRAY
ELEVATION
D
D
C
C
PLAN OF FIREBUCKET
• 3/4"-1'0"



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ARCHITECTS: POWELL AND MOYA

# CONTRACT • NEWS •

## OPEN

## BUILDING

*Notes below give basic data of contracts open under locality and authority which are in a bold type. References indicate: (a) type of work (b) address for application. Where no town is stated in the address it is the same as the locality given in the heading (c) deposit (d) last date of application (e) last date and time for submission of tenders. Full details of contracts marked * are given in the advertisement section.*

**BATTLE R.C.** (a) Erection of 26 houses at Cavix Field, Northiam, Sussex. (b) A. H. Neave, 38, Mount Street. (c) 2gns. (e) July 16.

**BERKSHIRE C.C.** (a) Erection of a nurse's house in Lovel Road, Winkfield. (b) County Architect, Wilton House, Parkside Road, Reading. (c) 2gns. (e) July 4.

**BEXLEY B.C.** (a) Erection of 10 shops, with three-bedroom type maisonnettes over, at Lodge Hill Estate, Welling. (b) Borough Engineer, West Lodge, Broadway. (c) 3gns., by cheque, payable to Corporation. (e) July 6.

**BILLINGHAM U.C.** (a) Erection of 48 brick bungalows and 8 houses at Lincoln Crescent. (b) Council's Engineer, Council Offices, Haverton Hill. (c) 2gns., by cheque, payable to Council. (e) July 2.

**BLOFIELD AND FLEGG R.C.** (a) Erection of 22 dwellings at Martham, near Great Yarmouth. (b) Council's Clerk, Council Offices, Acle. (c) 2gns. (e) July 9.

**CHESTER C.C.** (a) Erection of 60 two-storeyed houses and flats at Plas Newton Estate. (b) City Engineer, Municipal Offices. (e) July 2.

**COLNE.** (a) Erection complete, including ancillary works, of 22 old people's bungalows at the rear of Nos. 10/14, Keighley Road. (b) J. Taylor, Town Hall. (c) 2gns. (e) July 5.

**DURHAM C.C.** (a) Erection of additional classroom accommodation at Castletown J.M. School, Castletown Modern School, Gilesgate J.M. School, Hartlepool Hart Road J.M. School, Newton Aycliffe J.M. and Infants' Schools, and New Silksworth J.M. School and canteen scullery and extension to cloakrooms at South Hetton County and Modern Schools. (b) County Architect, South Street, Durham. (d) June 27.

**EAST RIDING OF YORKSHIRE C.C.** (a) Erection of classrooms at Elloughton Primary School and sanitary block and alterations at Leven C.E. School. (b) County Architect, County Hall, Beverley. (c) £2 each contract. (e) July 2.

**EIRE—DUBLIN.** (a) Erection and completion of warehouse and office accommodation for the Botany Weaving Mill, Ltd., Morning Star Road. (b) Thomas M. D'Arcy, 11, Leinster Street. (c) £15. (e) July 2.

**GOSPORT B.C.** (a) Erection of 150 two- and three-bedroom houses in pairs, blocks of four and terrace, and construction of 1,000 yards' run of estate roads and sewers, at Rowner Estate — No. 2. (b) Borough Engineer, Town Hall. (c) 2gns.

**HALE U.C.** (a) Erection of messroom, etc., at Refuse Tip, Grove Lane. (b) Council's Surveyor, Council Offices, Ashley Road. (e) July 4.

**HASLEMERE U.C.** (a) Erection of two pairs of houses at Tyndalls, Hindhead. (b) Council's Clerk, Council Offices. (c) 2gns. (e) June 30.


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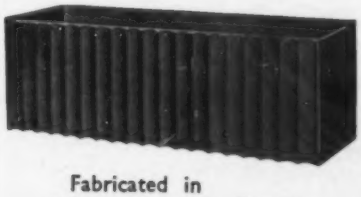
WINDOW BOXES

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**HEREFORD R.C.** (a) Erection of a pair of aged persons bungalows, with site works, at the Fownhope site. (b) Council's Clerk, Council Offices, 21, East Street. (c) 2gns. (d) June 29. (e) July 13.

**HINDLEY U.C.** (a) Erection of 84 houses at the Wooddagger Estate. (b) Council's Engineer, Town Hall, Lancashire. (c) 2gns. (e) July 7.

**KING'S LYNN CORPORATION.** (a) Erection of one pair of bungalows at Riversway and one pair at Losinga Road, North Lynn Estate, and 3 outbuildings at Raynham Close, Gaywood Park Estate, four at South Street, and four at Wood Street. (b) Housing Architect, Clifton House, Queen Street. (c) 1gn., by cheque, payable to Corporation. (e) June 29.

**KINGSTON-UPON-HULL C.C.** (a) Erection of 238 dwellings and 19 garages at Greatfield Estate. (b) City Architect, Guildhall. (c) 1gn. (e) June 29.

**LINCOLN C.C.—PARTS OF KESTEVEN.** (a) Erection of new farmhouses at Metheringham and Great Hale Estates. (b) County Land Agent, County Offices, Sleaford. (e) July 2.

**LONDON—EALING.** (a) Erection of a hostel for aged people on the Northolt Park Estate for Greater Ealing Old People's Homes Limited. (b) D. Herman, Town Hall, W.5., together with particulars of contracts and the type of work carried out. (e) June 30.

**LONDON—WOOD GREEN B.C.** (a) Erection of a brick boilerhouse at the Refuse Destructor, Western Road, N.22. (b) Borough Engineer, Town Hall, N.22. (c) 1gn. (e) July 2.

**MANCHESTER.** (a) Structural alterations scheme to premises located in Failsworth, Manchester. (b) Failsworth Industrial Society Ltd., 9, Old Church Street, Newton Heath, Manchester, 10.

**MANCHESTER CORPORATION.** (a) Carrying out alterations at Regional College of Art, Manchester, 15. (b) City Architect, P.O. Box 488, Town Hall. (e) July 3.

**MIDDLETON B.C.** (a) Erection of 18 flats and 20 houses on Hollin Estate. (b) Borough Architect, Town Hall. (c) 2gns. (e) July 2.

**NANTWICH U.C.** (a) Alterations and improvements to Nos. 16, 18, 20, 22 and 24, Arnold Street. (b) Council's Engineer, Brookfield House. (e) July 2.

**NEATH B.C.** (a) Erection of (Contract No 1) 12 houses and (Contract No 2) 10 houses, at Cimla No 3 site. (b) Borough Engineer, Gwyn Hall. (e) July 7.

**NEWCASTLE REGIONAL HOSPITAL BOARD.** (a) Erection of new accident and orthopaedic department at Middlesbrough General Hospital. (b) Board's Secretary, Walker Gate Hospital, Benfield Road. (d) June 30.

**NEWCASTLE-UPON-TYNE C.C.** (a) Erection of 82 houses and 7 old people's dwellings on Kenton North Estate, Groups 21 and 24. (b) City Architect, 18, Cloth Market. (e) July 12.

**NORFOLK C.C.** (a) Erection of one nurse's house at Filby and one at Spareham. (b) County Architect, 27, Thorpe Road, Norwich. (e) July 9.

**N. IRELAND — BELFAST.** (a) Erection and completion of a residence for old people together with alterations to the existing house, at Enderley, Knock, Belfast, for The Towell Building Trust Ltd. (b) Messrs. W. H. Stephens and Sons, 13, Donegall Square, North. (c) 5gns. (e) July 6.

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**N. IRELAND — CO. ANTRIM.** (a) Conversion of premises at Abbeyville, Whiteabbey, to a voluntary special school for handicapped girls. (b) John A. Tynan, 68, Royal Avenue, Belfast. (c) 3gns. (e) July 2.

**N. IRELAND — DOWN EDUCATION COMMITTEE.** (a) Erection of an assembly hall at Newtownards Model Primary School, Newtownards. (b) Henry Lynn, Scottish Provident Buildings, Donegall Square West, Belfast. (c) 3gns. (e) July 10.

**N. IRELAND — LONDONDERRY.** (a) Erection of a new primary school at Droghed, Aghadowey, Co. Londonderry, for Rev. J. C. Commins. (b) Messrs. F. M. Corr and W. H. D. McCormick, 7, Ferryquay Street. (c) 5gns. (e) July 2.

**NORTH KESTEVEN R.C.** (a) Erection and maintenance of one pair houses at Navenby, three pairs bungalows at Heighington, and two pairs houses and one pair houses at Potterhanworth. (b) J. Freeman, Flaxengate, Lincoln. (c) 2gns. (e) July 12.

**PONTARDAWE R.C.** (a) Erection of 20 houses at Brynamlwg, Clydach. (b) Council's Engineer, Council Offices, Pontardawe, Glamorgan. (c) £5, by cheque, payable to Council. (e) July 12.

**READING B.C.** (a) Erection of a building to house water pumping plant at Peppard Road, Emmer Green, Reading. (b) Borough Architect, Town Hall. (c) 2gns, by cheque, payable to Council. (e) July 11.

**SCOTLAND — MIDLOTHIAN C.C.** (a) Erection of 10 houses at Roslin. (b) County Architect, 32, Palmerston Place, Edinburgh 12.

**STROUD U.C.** (a) Carrying out alterations and additions to the Model Lodging House, Acre Street, and the conversion of the property into six flats. (b) Council's Engineer, Council Chambers, High Street. (e) July 16.

**WALES GAS BOARD.** (a) Erection of workshops, stores and garage accommodation at Ebbw Vale. (b) Engineer and Manager, Abertillery Undertaking, Wales Gas Board, Old Aberbeeg Road, Abertillery. (c) £4.

**WILMSLOW U.C.** (a) Erection of six self-contained shops with two-storey living accommodation above at the Lacey Green Estate. (b) A. J. Riley, Council Offices, Green Hall. (c) 2gns. (d) July 7.

## PLACED

*Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. † denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.*

**HATFIELD E.C.** (1) Completion of secondary school. (2) Travellers' Lane. (3) Y. J. Lovell and Sons, Ltd., Gerrards Cross, Bucks. (4) £95,000.

**HERTFORDSHIRE C.C.** (1) School. (2) Thorley Hill, Bishop's Stortford. (3) J. A. Elliott Ltd., Stanstead Road, Bishop's Stortford. (4) £46,912.

**WARWICKSHIRE E.C.** (1) Secondary school. (2) Henley-in-Arden. (3) A. H. Guest Ltd., Coalbourne Brook, Stourbridge, Worcs. (4) £112,831.

**LONDON, N.1.** (1) Factory for Sturt Hoxton Estates. (3) Y. J. Lovell and Sons Ltd., 6, Bathurst Street, London, W.2. (4) £100,000.

**WORKSOP B.C.** (1) 200 houses. (2) Kilton Hill Estate. (3) J. J. and A. R. Jackson Ltd., 438, Gateford Road, Worksop. £230,893.
**WEST HAM B.C.** (1) 113 flats, 71 maisonnettes. (2) Plaistow Road. (3) W. J. Simms, Sons and Cooke, Ltd., 78, Mount Street, London, W.1. (4) £428,000.
**BIRMINGHAM.** (1) Multi-storey department store. (2) 41, High Street. (3) J. Ashmore (Builders) Ltd., Bromford Lane, West Bromwich. (4) £50,000.
**FARNBOROUGH, HANTS.** (1) First stage of extensions. (2) Salesian College. (3) Chapman, Lowry and Puttick, Ltd., Haslemere, Surrey. (4) £58,750.
**SHEFFIELD REGIONAL HOSPITAL BOARD.** (1) Outpatients' department. (2) Children's Department, Western Bank. (3) J. E. Finnegan and Co. (Sheffield) Ltd., 847, Eccleshall Road, Sheffield, 10. (4) £93,000.
**RADCLIFFE-ON-TRENT.** (1) 200 houses for R.C.A.F. (2) Langar. (3) Spooners' (Hull) Ltd., Stoneferry, Hull. (4) £500,000.
**WARWICKSHIRE C.C.** (1) Extension of secondary school. (2) Atherstone. (3) V. Hallam Ltd., Valley Works, Langley Mill, Notts. (4) £101,720.
**CRAWLEY NEW TOWN.** (1) Stores for Littlewoods Mail Order Stores Ltd. (3) G. E. Wallis and Sons Ltd., 231, Strand, London, W.C.2. (4) £100,000.
**STOCKPORT CORPORATION.** (1) Superstructure. (2) Police headquarters, John Street. (3) W. J. Simms, Sons and Cooke, Ltd., Haydn Road, Sherwood, Nottingham. (4) £131,209.
**WELWYN GARDEN CITY.** (1) Methodist church. (3) G. Davies and Sons (Broxbourne) Ltd., The Spinney, Stanstead Road, Stanstead Abbots.


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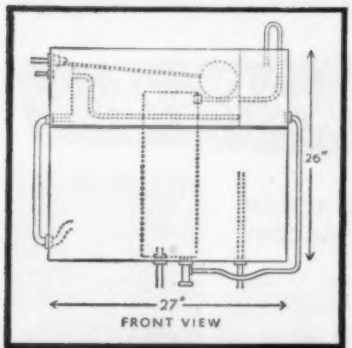
**PLOUGHLEY (OXON) R.D.C.** (1) Council offices. (2) Bicester. (3) Norman Collison, Pretoria House, Ambrosden, Bicester, Oxfordshire. (4) £20,668.
**NOTTS C.C.** (1) Extensions to secondary school. (2) Newark. (3) W. J. Simms, Sons and Cooke, Ltd., Sherwood, Nottingham. (4) £57,358.
**PORTSMOUTH CITY COUNCIL.** (1) 124 houses. (2) West Leigh Estate. (3) Auriol (Builders) Ltd., Fitzherbert Road, Cosham, Hants. (4) £158,062. (1) Dwellings. (2) Parkhouse Farm, Leigh Park Estate. (3) Southern Counties Construction Co. Ltd., 204, London Road, Waterlooville, Hants. (4) £89,967.
**ESSEX C.C.** (1) Residential school. (2) High View, Chigwell. (3) William J. Jerram Ltd., East Ham, E. (4) £130,370. (1) First instalment of College of Further Education. (2) Harlow. (3) David Chaston Ltd., Hoddesdon, Herts. (4) £155,268.
**HEYWOOD B.C.** (1) 96 flats. (2) Hardfield estate. (3) James Hobson and Sons Ltd., 55, Newark Street, Nottingham. (4) £99,750.
**HEYWOOD B.C.** (1) St. Joseph's R.C. School. (3) Parker and Calvert Ltd., Pine Street, Heywood, Lancs. (4) £93,252.
**ASHTEAD, SURREY, E.C.** (1) Primary school. (3) W. Ingram and Son Ltd., Coulsdon, Surrey. (4) £38,000.
**OXFORD.** (1) Additions. (2) Pembroke College. (3) Benfield and Loxley, Ltd., Bullingdon Road, Oxford.
**WINCHESTER CITY COUNCIL.** (1) 166 dwellings. (2) Winnall Manor estate. (3) Hawkins Bros. (Gosport) Ltd., Westfield Road, Gosport, Hants. (4) £246,672.
**LONDON, W.** (1) Large extensions for Automobile Association. (2) New Coventry Street. (3) Leslie and Co. Ltd., Kensington Square, London, W.8. (4) £500,000.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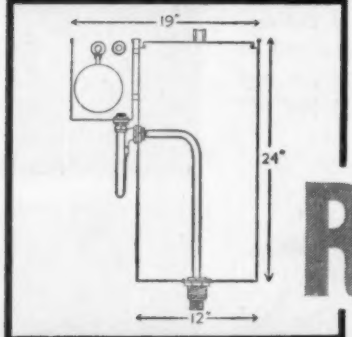


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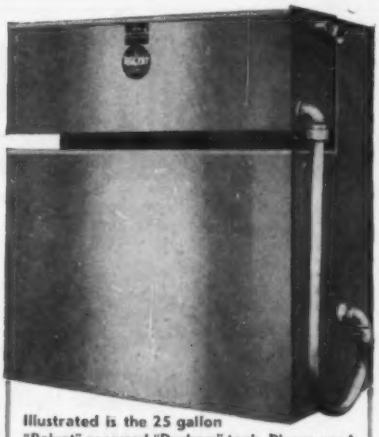

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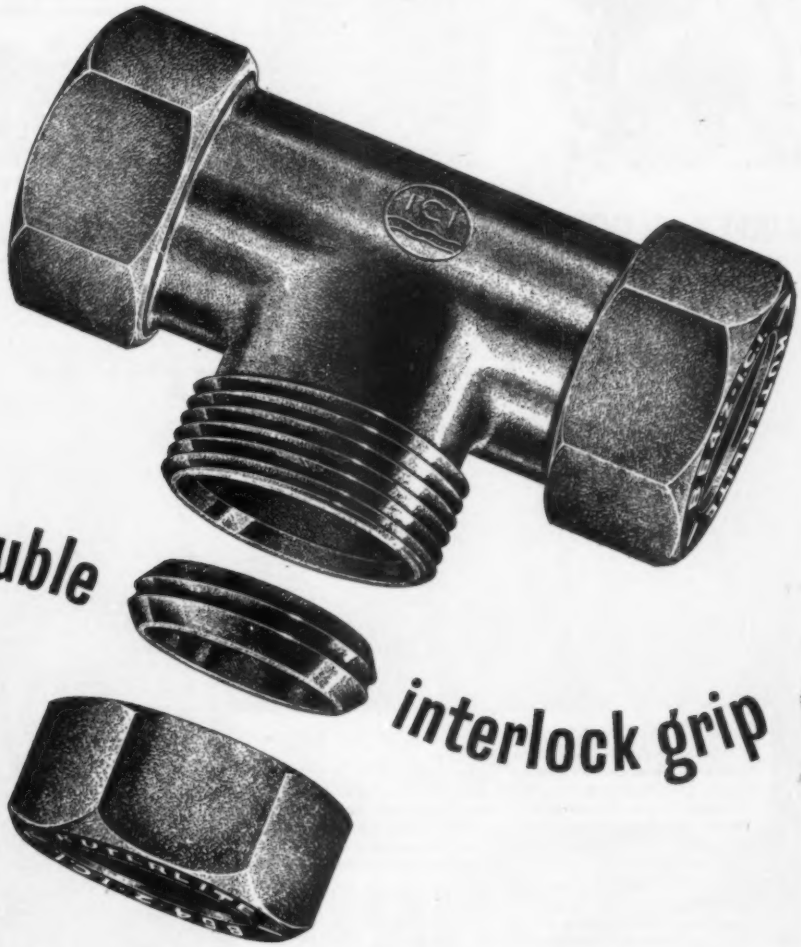


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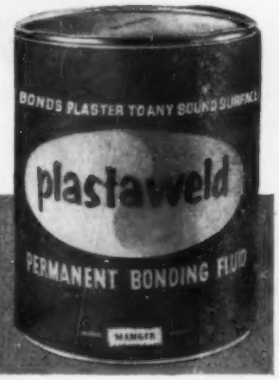


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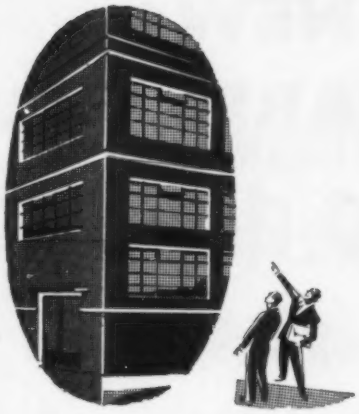

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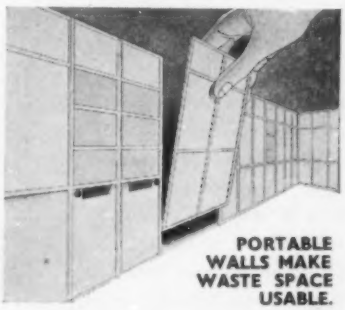

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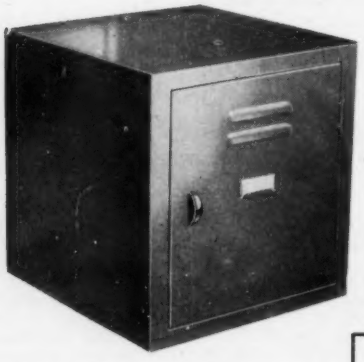

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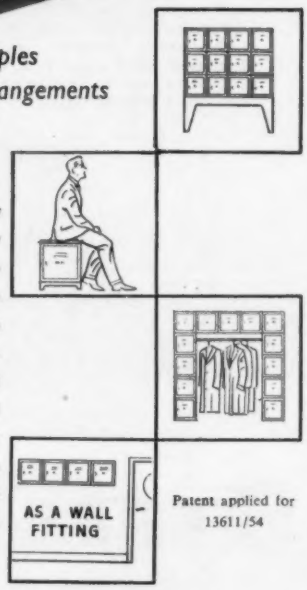


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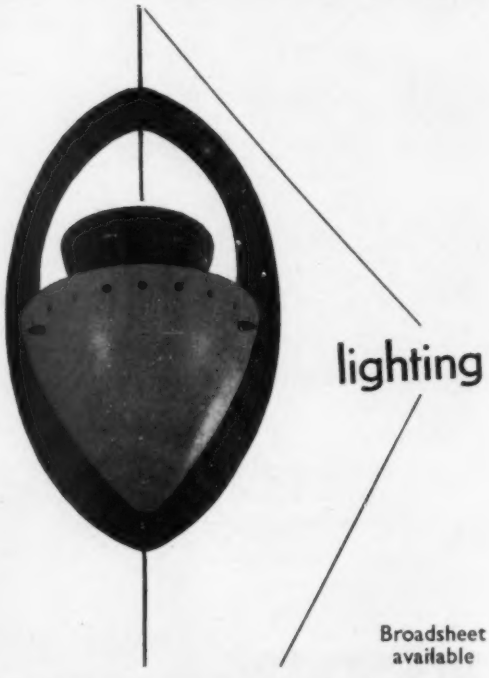


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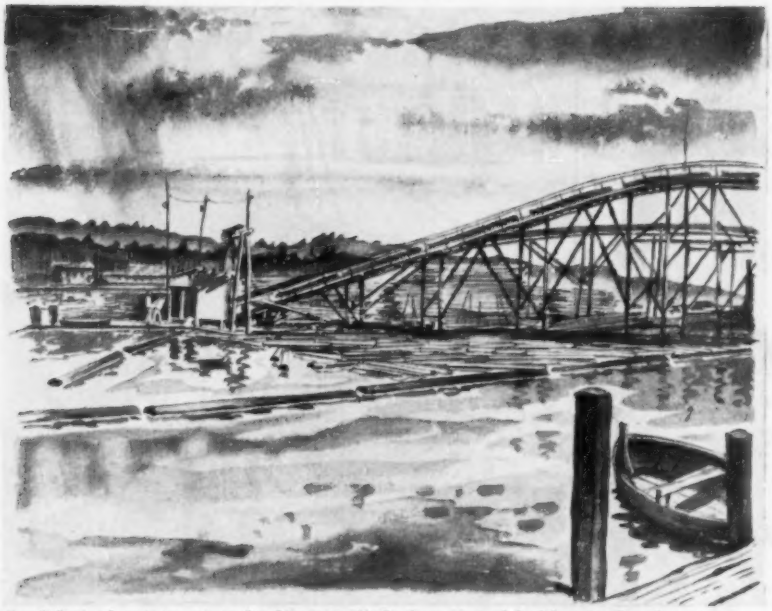

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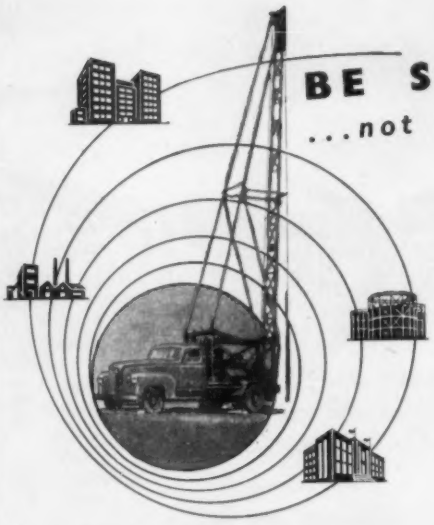


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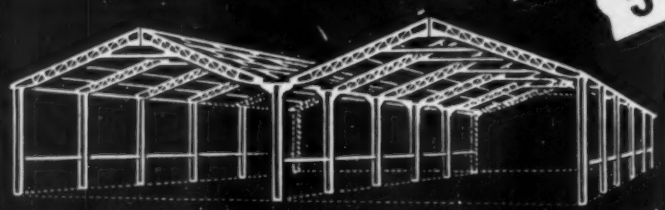

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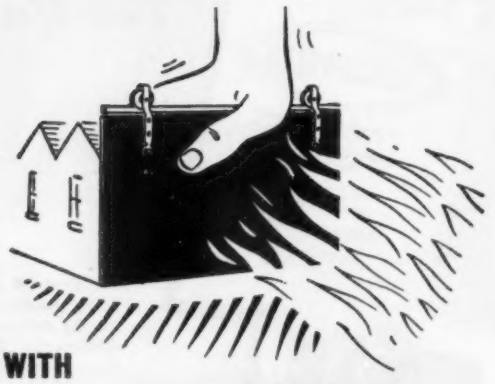

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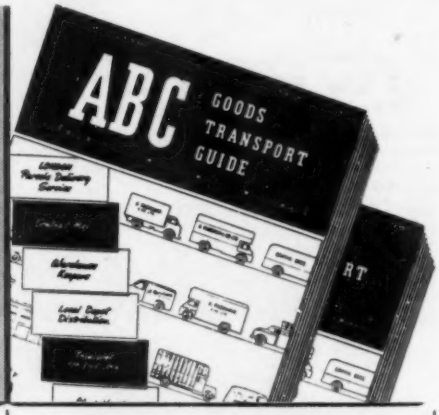


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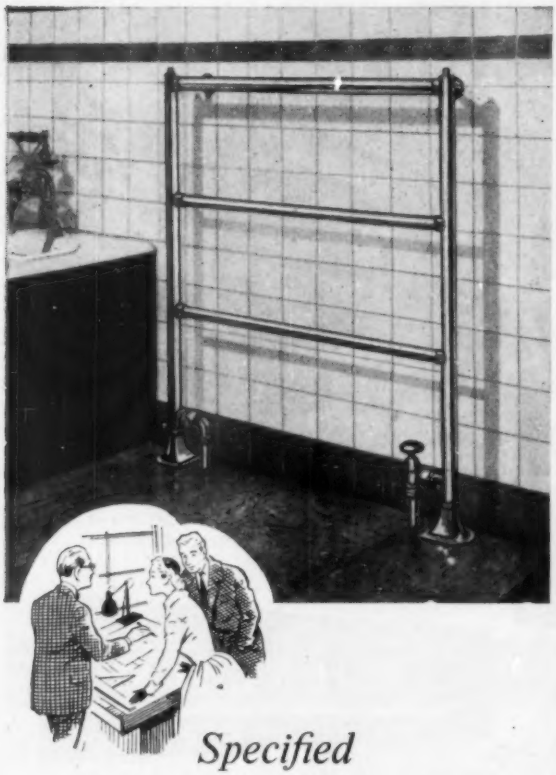

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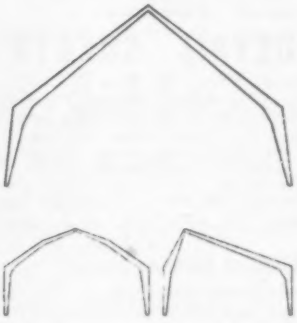

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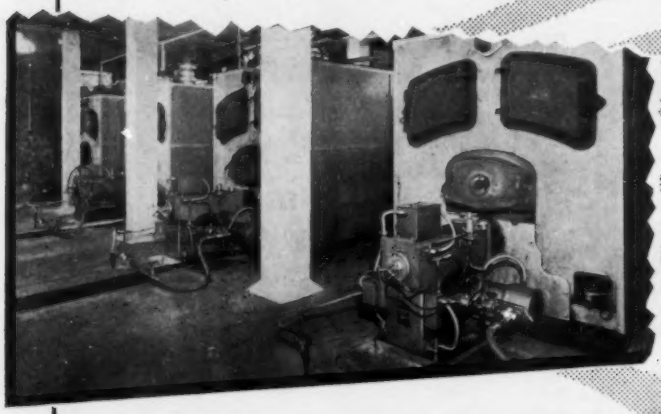

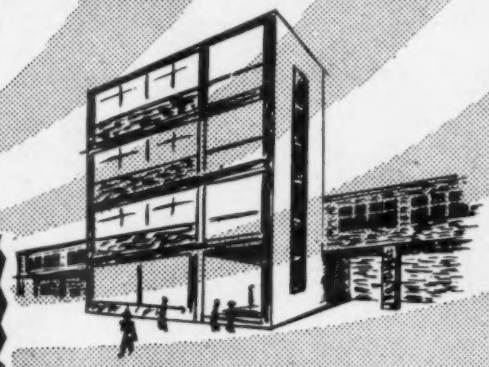

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(c) SENIOR DRAUGHTSMAN (Architectural) (Capital Works).
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Applications, giving details of experience, qualifications and age, should be addressed to London Representative, Nigerian Railway Corporation, 11, Manchester Square, W.1. Closing date 7th July, 1956. [2471

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Further particulars and application forms obtainable from and to be returned to The Borough Architect, The Council House, Corporation Street, Derby, not later than Monday, 9th July, 1956.

G. H. EMLYN JONES,
Town Clerk.

14th June, 1956. [2464

## APPOINTMENTS—cont.

**COUNTY COUNCIL OF THE COUNTY OF LANARK**

HOUSING ARCHITECT AND ENGINEER'S DEPARTMENT.

APPLICATIONS are invited for the following appointments to the staff of the County Housing Architect and Engineer at Beckford Street, Hamilton:

ARCHITECTS.

(a) Senior Assistant Architects. Salary £1,100/£1,150. Applicants must be A.R.I.B.A., have extensive experience in design and construction of housing developments and able to assume a position of responsibility.

(b) Architectural Assistants. Salary scale A.P.T.I—VIII (£550/£980). Applicants should have good experience in design and construction of Housing Developments. Commencing salary and placing will depend on experience and/or qualifications.

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IAN V. PATERSON,
County Clerk

Lanarkshire House,
191 Ingram Street,
Glasgow, C.1. [2462

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**BOROUGH OF WORKINGTON**

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APPLICATIONS are invited for the appointment of an Architectural Assistant in the Borough Surveyor's Department at a salary in accordance with A.P.T. Grades II (£595 - £675) or III (£640 - £765) according to qualifications.

Applications should be made on forms which can be obtained from the undersigned, and are to be sent in not later than 2nd July, 1956.

Housing accommodation will be provided for the successful applicant, if required.

RUSSELL C. PHARAOH,
Town Clerk.

Town Hall,
Workington.
15th June, 1956. [2453

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**BOROUGH OF GOSPORT**

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APPLICATIONS are invited for the above appointment from persons having passed Parts I and II of the R.I.B.A. Final Examination or its equivalent. Salary in accordance with the N.J.C. Special Grade for Architectural Assistants (£690 x £30 — £840 per annum). The appointment will be subject to the following:—

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(2) Medical Examination.
(3) The Local Government Superannuation Acts.
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Applications, giving age, details of experience and the names and addresses of two referees, should reach the undersigned not later than Saturday, 30th June, 1956.

EDWARD ADDENBROOKE,
Town Clerk.

Town Hall,
Gosport, Hants. [2452

## APPOINTMENTS—contd.

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W. D. D. FENTON,
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[2451

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(3) ASSISTANT ARCHITECT.
Salary in accordance with Grades A.P.T. II and III of the National Scales.

Applications, giving full details of qualifications and experience and names of two referees, should be delivered to me not later than 6th July, 1956.

ADRIAN M. KELLY,
Clerk of the Council.

Council Offices,
Grenoside,
Sheffield. [2450

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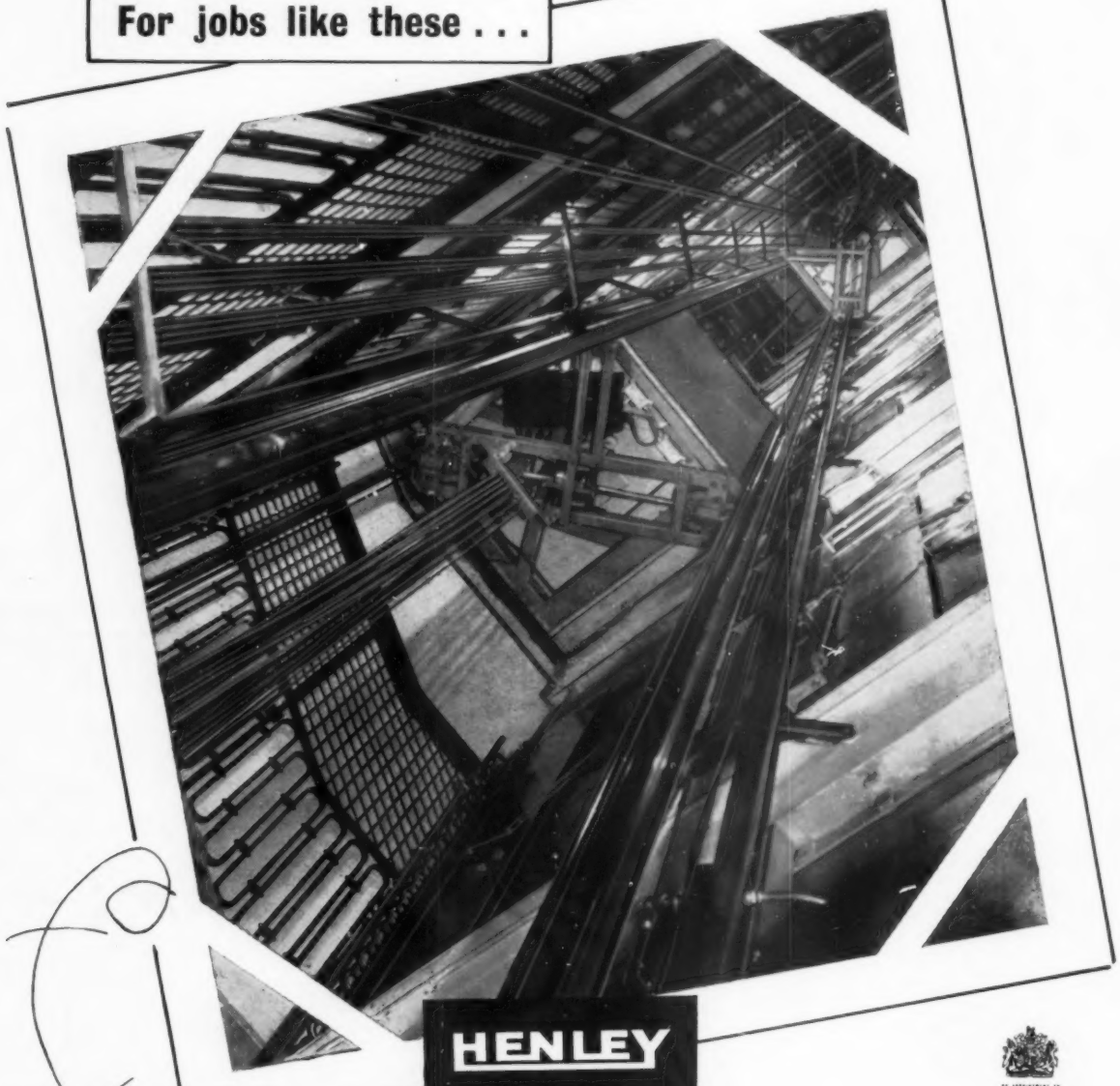

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